

The future of interactive entertainment
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Artificial Life, for so long the preserve of science fiction writers, is emerging as a concept with tangible applications, and videogaming is where all the progress is being made. Edge speaks to the proselytes and AI scientists behind the technology that will change the face of computing forever



Biological synthesis

Lifeforms of the digital kind



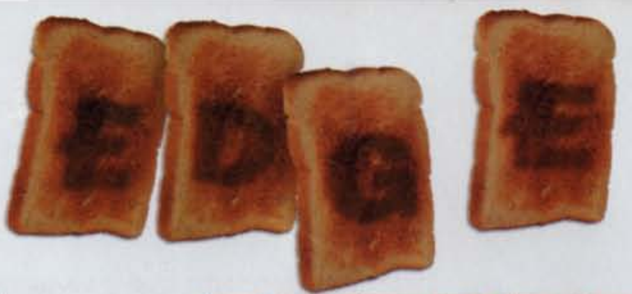
Given that computers have been around for decades it's odd that the development of genetic synthesis is a concept that has only started to show signs of life. Despite the extensive research that scientists have made in the areas of neural networking and artificial intelligence, it's ironic that some of the most advanced developments have been cultivated in the videogames arena.

Millennium's *Creatures*, while hardly warranting the accolade of state of the art when scrutinised on an aesthetic level, arguably reveals some of the signposts to how life can be emulated on computers. Norns, the characters that the game is based around, may look like the average dumb, cutesy videogame sprites, but give them a while to trundle around the screen and in no time they will be planning the future of their own race. Or that's how the player will see it, at least.

Quite how such levels of intuition will manifest in more established forms of interactive entertainment is for computer boffins to research and for game designers to dream about. But the potential for artificial life to enrich the average videogame with depth that goes beyond preset routines and scripted interactivity should clearly be at the top of the development agenda.

Of course, the drawbacks of such software pioneering could well be chaotic environments that offer little or no respect for the player, and software bangwagons that thrive on dull life simulations and genetic mutation programs. However, if AL is nurtured and implemented in a responsible fashion, the axioms of videogaming could change forever. Who knows, perhaps even beat 'em ups will move a few steps up the evolutionary ladder...

The **Future** *is almost here...*







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FEATURES

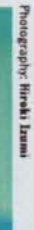
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George Zachary (top right). M2 demo (above). *Quake* (above right)




Final Fantasy VII (left). *Porsche Challenge* (above)




Tobal No.1 (left). *Tunnel B1* (above)




Photography: Mark Koehler



Photography: Michael Donald




REGULARS







Matsushita talks exclusively to **Edge** about its plans for M2/**page 6** • *Virtua Fighter 3* is released in Japan/**page 9** • Nintendo details its US launch strategy/**page 10** • The 3DO Company makes a profit and starts developing for the competition/**page 11** • Apple reveals its Mac gaming strategy/**page 12**



*The latest **news** from the world of interactive entertainment*

M2: Matsushita poised to enter **64bit** arena

The Japanese giant breaks its silence over the world's most powerful gamebox





One of the games currently in development for Matsushita's M2 console is a *Doom*-style firstperson shoot 'em up (main). The console's launch will be handled by a new company within Matsushita called Panasonic Wondertainment in Shibuya-ku (right)

3DO lost it, Matsushita bought it and for months the videogames industry had almost given up on ever seeing it. But now the long-awaited M2 console is nearing completion. Hype and speculation surrounding the machine has equalled that concerning the N64, the only difference being, where talk of the latter was mostly positive, M2 has almost universally been derided and mocked – perhaps due to its connections with **Trip Hawkins**' abortive 3DO 32bit platform.

Now, though, it looks like the deriders will have to swallow their words. **Hiroyuki Sakai**, software development producer at Panasonic Wondertainment, spoke to Edge recently and revealed exclusive details about the machine's composition. The outlook, it seems, is much more promising than had previously been expected.

It is now confirmed that, as reported in E35, M2 will feature a twin CPU setup. One unit will deal mainly with 3D matrix calculations (rather like the PlayStation's geometry engine), while the other will focus on general calculation (game logic, etc). The system also employs a setup engine which streamlines the coordination between the two CPUs – this engine is not built into either CPU but operates independently.

E3 Tokyo preview

While Matsushita would not commit to a launch date for its 64bit CD-based console, the current rumours suggest that the machine will be previewed at Japan's first Electronic Entertainment Expo during the first week of November. Naturally, **Edge** will be there.

Daytona Plus

More details have emerged about Sega's reprogrammed version of *Daytona USA*, the modestly titled *Daytona Plus: Daytona USA Champion Circuit Edition*. The conversion is being handled by some of the team behind the Saturn version of *Sega Rally* and includes a two-player mode, as well as a 30fps frame rate and analogue pad control. The PAL version will be available in November shortly after the Japanese release.

receiving data from the general data CPU and sending it on to the graphics engine – what Matsushita calls 'pipeline processing'. Plans to incorporate two PowerPC 603 custom chips in the M2 hardware have fallen through, the two CPUs will be 602-based chips as originally planned.

The use of two CPUs has prompted mixed reactions from industry pundits. Some believe that employing a CPU just for 3D matrix calculation amounts to a waste of silicon, and that a DSP would suffice. There has even been speculation that Matsushita's decision may have been prompted by a need to get the machine finished quickly.

Controversy also surrounds another area of the M2 architecture, namely the decision to include a graphics chip capable of simultaneously displaying MPEG1 images and polygons on screen. As Sakai points out, 'The main technical feature of the M2 is this capability to mix MPEG1 images with polygons. For example, the screen can be split into two parts, the upper part could show an MPEG movie and the lower part could display polygons. In this way, you could have an aeroplane flying in the MPEG upper half, which would turn into a polygon model when flying into the lower half. On most other platforms CG scenes can only be included as demos – on the M2, the player will be able to interact with them.'

The question is, however, will this ability to combine MPEG1 with polygon images actually provide a realistic and practical resource for game designers, or will it prove to be little more than a hi-tech white elephant? Technically, the innovation sounds promising, but the danger, of course, could be a slew of shallow movie conversions.

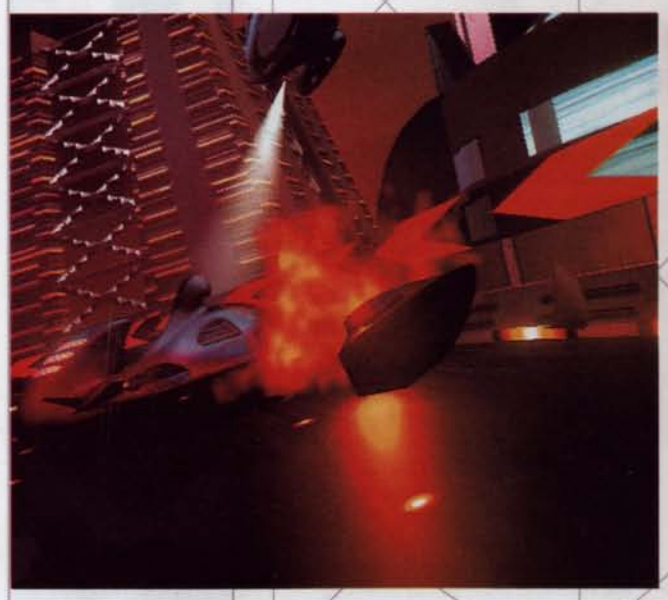
In terms of its realtime abilities, M2's recent CPU power-up clearly has the potential to provide mindblowing 3D. But just how powerful will it be? And how will it fare against the current state-of-the-art in arcade technology? 'I don't know the exact specifications of Model 3 but I base my opinion on the specs announced by Sega concerning the number of polygons. Given this, I think the capabilities of M2 and Model 3 could be considered approximately the same,' Sakai-san told **Edge**. 'Considering these points – processing speed, number of polygons, etc. – I think the M2 offers the same capabilities. And since ours is a consumer board, and the Model 3 is an arcade board, we have a really good piece of hardware.' Of course, technical specifications revealed in the development stages of a platform's life are usually wildly exaggerated, but, if Matsushita's claims hold any truth at all, it will mean a performance of around one million polygons per second – just a pipe dream when M2 was still part of the 3DO camp. To lend credence to this, Matsushita is already developing its own arcade board in conjunction with Konami – like Namco's System 11 and Sega's ST-V systems but, of course, with high-end specs.

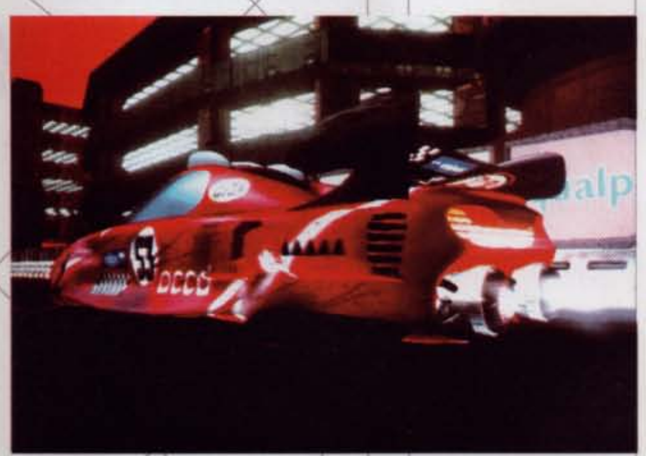
Interestingly, Matsushita seems to have learnt from 3DO's mistakes and has decided not to market its machine as a kind of family multimedia accessory. 'At the release, we want to market the M2 as a games console,' assured Sakai, 'but because of the hardware potential, we may promote the



Hiroyuki Sakai, software development producer at Panasonic Wondertainment

THE MAIN TECHNICAL FEATURE OF THE M2 IS THE CAPABILITY TO MIX MPEG1 IMAGES WITH POLYGONS... 'THE SCREEN CAN BE SPLIT INTO TWO, THE UPPER PART SHOWING A MOVIE AND THE LOWER POLYGONS'





Apart from the *Doom* clone, a futuristic racing game is also in development for M2. Both of these titles were started over a year ago as Studio 3DO projects and their status is currently unclear

Who is it?

Not only responsible for three of the greatest films of all time, this man also owns a company that produces the best point and click adventures for the PC and last year turned its hand to the N64.

RAMdom numbers

One major question mark still hangs over the amount of RAM that will be included in Matsushita's console. Given the number of polygons the machine will be juggling, a figure of eight megabytes would seem like a conservative estimate

Continued next page

Continued

Romero quits

John Romero is to leave id Software. The influential designer behind the success of id's trailblazing worldwide smashes *Doom* and *Quake* is to set up his own development company, provisionally entitled Dream Design. It's an amicable break with id's Jay Wilbur commenting, 'John has been integral to the incredible growth and notoriety of id Software. We wish him the best of luck and can't wait to see his creations.'

machine in other areas after the initial launch date. In the future, we definitely want to connect a DVD player and we are thinking about working on a modem option as well.' The DVD attachment is likely to be based on the same technology as the Panasonic DVD player recently launched at the Tokyo *Windows* Expo '96.

Videogame support will be of paramount importance now that it is clear M2 is being initially marketed as a games machine. According to Sakai, Capcom and Konami – both major Nintendo cohorts – are working on projects for the platform, and other companies (Warp was the first public Japanese M2 developer) are believed to have signed up. As for *Mario*-beating launch software, Sakai remains reticent. 'It is not official yet. We can only say that, on the release day, consumers will not be disappointed by the number of titles available. There will be more available than there were for the launch of the N64.'

As well as initial software support, price will be an important factor in the machine's success, and Matsushita is well aware that it needs to keep the price down to attract gamers. 'The PlayStation was released at ¥34,800 (£210), the Saturn at ¥40,000,'



Matsushita's Sakai: 'The 32bit generations brought some real improvements to game making... the M2 will bring the same capabilities, but at a higher level'









M2 mock-ups

Panasonic presented three different mock-ups of how the M2 console could look at the 1995 E^3 show (top three designs, above) and Edge has learned that one of the five designs worked on last year has now been sent to senior management for approval. Mr Sakai maintains that the finished design will be different from the grey Goldstar model Edge presented in issue 35 (above) and that will have more 'sharper edges'. Not too sharp, hopefully...

ON THE RELEASE DAY CONSUMERS WILL NOT BE DISAPPOINTED BY THE NUMBER OF TITLES AVAILABLE FOR THE M2. THERE WILL BE MORE AVAILABLE THAN THERE WERE FOR THE NINTENDO 64 LAUNCH



Matsushita's headquarters are located in Japan's 'silicon valley' in Osaka

explains Sakai. 'Now, these two machines are being sold at around ¥20,000. We plan to market the M2 at a lower price than the PlayStation and the Saturn when they were released. Even if we lose money on the hardware, we want to release it at a price that will allow us to reach the maximum amount of consumers.' Based on a competitive consumer price, Matsushita hopes to sell between 1,000,000 and 1,500,000 units in the first year – perhaps even two to three million if the production-line capacity will allow it. This is an ambitious figure considering that only around 500,000 3DO multiplayers were sold in its first year.

On the subject of the ailing 3DO console, it seems that Matsushita is trying its best to distance M2 from its slightly embarrassing parent. '3DO software will not be able to run on M2 – it will not have any upward compatibility,' explained Sakai. 'We are now having internal talks about the best way of introducing a 3DO accelerator [ie an M2 upgrade for existing 3DO units], but nothing has been decided yet.' Furthermore, although two software projects were mentioned by Sakai (a *Doom*-style shoot 'em up and a racing game), no reference was made to Studio 3DO, the original developer of these titles when M2 belonged to 3DO. Whether these titles have now been taken in-house in Japan isn't clear although it's more likely that Matsushita has its own plans for internal software development.

Despite some uncertainties, it looks like the M2 is shaping up to become an auspicious 64bit platform. Sakai is certainly very confident. 'The 32bit generations brought some real improvements to game making: nice graphics, good sound, lots of polygons, etc. The M2 will bring the same capabilities, but at a higher level. Personally, I doubt that we can only consider these factors when designing games – gameplay is also very important to the player. Just considering graphical quality, though, the M2 will fully satisfy players.'

If Matsushita's machine finally lives up to Hiroyuki Sakai's rhetoric, the Nintendo 64 could well soon be facing its first rival – a rival that promises more than just three games at its launch and one that will eventually feature modem and Digital Video Disc compatibility.

It is...

George Lucas, who is reported to be well into pre-production on the three Clone Wars films: prequels to the seminal Star Wars trilogy. *Shadows of the Empire* is due out on the N64 later this year.

VF3: Sega and Suzuki come out fighting

Sega gives the Japanese its first chance to control the world's best realtime graphics


The *VF3* machines set to freeplay were popular

At a private exhibition held regularly for distributors near its Tokyo headquarters, Sega recently gave arcade distributors, Japanese games journalists and selected videogame designers their first chance to play an advanced version of *Virtua Fighter 3*. The long-awaited sequel to one of Japanese arcade gaming's sacred cows was one of three major coin-ops on show with *Sega Touring Car Championship* and *Wave Runner* also on display. Sega obviously placed some importance on the show as the head of its AM department, **Higashi Suzuki** (no relation to Yu) was on hand to personally introduce the games to selected visitors.

Virtua Fighter 3 designer **Yu Suzuki** also put in an appearance on the second day of the show, gave a 40 minute talk on the game and then proceeded to take on allcomers at his new coin-op. The Model 3 board running *VF3* will be housed in a variant of the existing Model 2 PCB cabinet, which will be lower and boast a slightly larger screen and four buttons (for a more detailed preview of Sega's latest arcade giant see page 98).


Pai fights with Jeffry atop a Chinese restaurant. Pai's high-kick shows off the motion blur effect, a new feature for the *Virtua Fighter* series

VIRTUA FIGHTER 3 DESIGNER YU SUZUKI PUT IN AN APPEARANCE ON THE SECOND DAY OF THE SHOW, GAVE A 40 MINUTE TALK ON THE GAME AND PROCEEDED TO TAKE ON ALLCOMERS AT HIS NEW COIN-OP

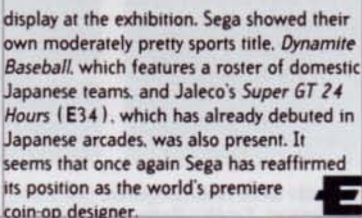



Yu Suzuki 'takes on allcomers' at the first public playing of *VF3*

Suzuki wasn't the only Sega notable showing his face – **Tetsuya Mizuguchi**, head of Sega's nascent AM Annex division was demoing his latest game, *Sega Touring Car Championship* (for more on the game check out **Edge**'s report on Mizuguchi's team starting on page 52). The 60% complete racer was in its impressive finished hydraulic cabinet. Making a simultaneous splash was AM1's *Wave Runner* (see page 99), which possibly outclasses the two other jetski coin-ops in development, Namco's *Aqua Jet* and Konami's *Jet Surfer*.

Finally, two other games running on Sega's ageing Model 2 board were also on display at the exhibition. Sega showed their own moderately pretty sports title, *Dynamite Baseball*, which features a roster of domestic Japanese teams, and Jaleco's *Super GT 24 Hours* (E34), which has already debuted in Japanese arcades, was also present. It seems that once again Sega has reaffirmed its position as the world's premiere coin-op designer.




The fully-finished *Sega Touring Car* cabinet housed a 60% complete game




Suzuki shows the punters how it's done

Different strokes

Among the new features introduced in *Virtua Fighter 3* are two new characters (Umenokouji and Takaarashi), contoured terrain for arenas and a new dodge move that lets characters block and immediately counter attack.

What is it?

This Ultimate Play The Game title for the Spectrum managed to create a completely new genre in videogaming and force game developers' heads to turn and gasp: 'how do they do that?'



N64: Nintendo draws $199 'line in sand'

Nintendo of America prepares for a 64bit whitewash





Seta's *Rev Limit* (left), its golf game based around the famous St Andrews course, and helicopter shoot 'em up, *Wild Choppers* (right)



Following rumours of a US Nintendo 64 launch price drop, **Edge** can confirm that on September 30 the 64bit console will be retailing at $199 - a figure that matches the current prices of Sony's and Sega's machines. 'We are drawing a line in the sand and making sure everyone understands we are serious about this market,' said a Nintendo spokesperson.

Whether this new reduced price reflects any prelaunch jitters on the part of the Japanese company or whether it's just a case of determined Nintendo bullishness is, of course, open to question.

Another early question mark hovering over the N64's American launch concerns the details of the September release schedule. After initial warnings from Nintendo itself of possible shortages of the console, it seems the Japanese giant has been surreptitiously reassuring certain retailers that it can supply enough units to satisfy whatever prelaunch reservation demand exists.

Over in Japan, the number of planned releases for the N64 continues to grow. As **Edge** reported last issue, NCL's slated releases for the rest of the year include *Wave Race 64*, *Mario Kart 64*, *Star Fox 64* and *F-Zero 64*. Since then **Edge** has learned of more titles in the pipeline including three games from Seta - *Wild Choppers*, *Rev Limit* (see page 40) and a golf game - that seemingly came from nowhere.

Edge also contacted Boss Game Studios over rumours that the company was working on an N64 title called *Top Gear Rally*. The following day, the American firm issued a press release confirming that it was working on the project and then posted screenshots on its Website.

Other titles to come to light include Epoch's *Doraemon* - a Japanese anime/manga license set in a vaguely *Mario 64*-esque 3D world - and *Wonder Project J2* from Enix - a follow-up to a Super Famicom original which, apparently, involves teaching a puppet to do tricks.

Yamauchi talks

NCL's chairman, Hiroshi Yamauchi, recently delivered his annual speech on the state of Nintendo and laid out the defence for the company's N64 strategy. 'It's been more than ten years since our industry first discovered the dangers of flooding the market with substandard product. Now history is repeating itself,' he stated, in an attempt to rubbish the opposition and provide justification for Nintendo's skimpy N64 release schedule. He went on to add that 'the release of four or five top quality games per month for Nintendo 64 is the proper approach, both for games players, and the company's continued financial success.'

Yamauchi went on to announce that Nintendo's overall annual revenue had declined from $3.9 billion to $3.3 billion.



It is...

The isometric 3D arcade adventure *Knight Lore*. Sandy White's less impressive *3D Ant Attack* came first, but Ultimate's title set the agenda for games such as Climax's *Dark Saviour* (see page 42)

OVER IN JAPAN, THE NUMBER OF PLANNED RELEASES FOR THE NINTENDO 64 CONTINUES TO GROW. NCL'S SLATED RELEASES FOR THE REST OF THE YEAR INCLUDE *WAVE RACE 64*, *MARIO KART 64*, *STAR FOX 64* AND *F-ZERO 64*









New N64 titles in development (from left): Enix's *Wonder Project J2*, NCL's *Wave Race 64* (to be released in September), Epoch's *Doraemon* and Kemco's *Top Gear Rally* (SGI shot), in the works at Boss Game Studios in the US

DATA stream

According to Dataquest, number of handheld computers sold last year: **773,000**
Penguin Books' yearly profits: **£34m**
According to the book Open Skies, Closed Minds by Nick Pope, the estimated number of Americans who have taken out insurance against alien abduction: **35,000**
Number of cigarettes smoked worldwide every day: **15 billion**
N64 shipments in Japan after nine weeks on release: **800,000**
US cost of cold war (1948-1991): **$12,800,000,000,000** (source: CDI Military Factoid)
According to the Cosmopolitan guide to working in retail, percentage of McDonalds junior management positions held by women: **31%**
Number of pairs of knickers sold each year by Marks and Spencers: **85m**
Number of people who attended the Oasis Knebworth gig: **250,000**
Percentage of the UK's population that applied for tickets: **5%**
Percentage of calls made on the BT network through Demon: **1**
Number of vacuum tubes contained within the US war department's 1946 Electronic Numerical Integrator – an early forerunner of the computer: **18,000** (from Digital Creativity by Owen Kelly)
Number of failed or surplus diskettes thrown away by computer users everyday: **3-4 million** (source: Green Disk)
Number of Superscape VR products installed worldwide since 1986: **150,000**
Percentage of PC malfunctions due to electrical faults: **70%**

3DO pursues new software strategy

The 3DO Company records its first profits and announces a multiformat strategy

Despite a 'quiet' summer on the software front, The 3DO Company has kept itself busy with a number of developments. Some 17,000 people have already played an early version of its multi-user Internet game, *Meridian 59*, with 3DO predicting 'millions' will play the finished version to be released in the autumn.

3DO has also announced that its in-house development team, Studio 3DO, will produce games for the PC, with ten titles slated for release this year. They include *Strife*, an ambitious mix of *Doom*-style play mechanics with a role-playing adventure plot, the self-explanatory *3DO Games: Decathlon* and the *Game Guru* cheat utility. In a similar vein, Acclaim is to release three 3DO games on the PlayStation and Saturn – *Star Fighter*, *Killing Time* and *Battlesport* – with the latter title also set for a PC release.

It's also been revealed that 3DO has acquired New World Computing, developer of the *Might & Magic* series of RPGs. And the company has shown revenues of $14.7 million for the quarter ending March 31 and a net income of $1.2 million.



The 3DO Company's multi-user Net game, *Meridian 59*, currently has 17,000 people playing it. The first in a series of turnarounds for the US company?

Online merger starts Net gaming war

The marriage of two online services equals trouble for the competition

In the ultra-competitive US online game service market, two combatants have formed an alliance. MPath Interactive (provider of the imminent MPlayer game service) and Catapult Entertainment (the company behind the pioneering X-Band service) have inked a deal worth an estimated $5-$10 million. The new company will continue under the name of Mpath Interactive.

'The powerhouse company we are creating will set the agenda for the online game industry,' said Catapult's president, **Adam Grosser**. The competition, however, was quick to respond. 'I have to assume they were in trouble or they wouldn't have done it,' commented **Daniel Goldman**, founder and chairman of TEN (the Total Entertainment Network). 'We are still the only service which I believe has a number of exclusives on the PC side.'

Once the technology is in place, the war will become one of pricing and content. TEN is already boasting a number of 'exclusives' (most notably *Duke Nukem 3D*), while Mpath is known to have deals with id software to offer *Quake*. Catapult is largely alone in the console world, although it is expected that both Sony and Nintendo will match Sega's NetLink initiative and attempt to set up some form of proprietary gaming network.

Whether or not any full-scale, multiplayer online gaming service will be up and running before 1997 is still unclear but this move has to be a step in the right direction.

CATAPULT



The combined force of MPath and Catapult should provide a powerful online service

Apple embarks on strategic gaming initiative

Edge talks to Apple's games evangelist, Mark Gavini, about the future of Mac gaming

New Macs

As part of its increasing push into the consumer/SoHo market, Apple Europe has just launched a range of Macintosh 'solutions' based around Performas powered by the latest Motorola/IBM release, the PowerPC 603e. Apple claims that this represents a 272% performance increase on last year's model. Top of the range is the £2,299 Apple Creative Studio with a 200MHz CPU, 24Mb RAM, a 2.4Gb hard drive, built in 28.8Bps modem, 8x speed CD-ROM and a hefty amount of software. Gaining the most attention, though, is the stylish 'Black Mac', otherwise know as the Family Macintosh. Based around a 180MHz PowerPC 603ev, it's similar to the 200MHz model but with a 1.6Gb hard drive, 16Mb RAM and less software. It will retail for £1,699.

By its own admission Apple gave serious consideration to the games market very late in the day, adopting a laissez faire attitude that for many years saw games software appearing on the platform in a haphazard, intermittent way. Now, with a new range of PowerPC-based Macs aimed squarely at the domestic market, the games kitchen development sessions, the onset of Pippin and the development of its cross-platform Games Sprockets set of APIs (see sidestory, right), the company is self-evidently taking the games sector seriously. It can't do all this in isolation, though, and the man at the sharp end trying to persuade developers to port or create software for the platform is **Mark Gavini**. The brief is simple: 'My mission as the games evangelist is to make sure that the best of class games are always on the Macintosh and wherever they are cross-platform that the best version is the one on the Macintosh,' he says.

From a technical standpoint, Gavini insists that with the sheer horsepower of the PowerPC CPU the job is simple, and the Mac is now seen generally as having the potential of a 'really good' games platform. Harder, though, is overcoming the perception that it is financially unviable to publish on the Mac.

'I can come back and show you figures that will show the Macintosh games titles market in the United States is worth $100 million of revenue. It's not as big as the *Windows* market but it's easier to be profitable with a Macintosh title, especially if you've already developed it for another computer or you're doing it at the same time. Basically your development costs for the game are being written into the financial model for the PC title. So if the game is developed, marketed and published on the PC, to bring that title to Macintosh is often a very minimal effort of converting it to run on the Mac, then tweaking it for our operating system, then adding the additional features that we can offer like speech recognition or things like that.'



Currently in development, *Sanctity*, from Antennahead Industries, uses Apple's SoundSprocket to provide the game with 3D stereo sound effects

'MY MISSION AS THE GAMES EVANGELIST IS TO MAKE SURE THAT THE BEST OF CLASS GAMES ARE ALWAYS ON THE MAC AND WHEREVER THEY ARE CROSS-PLATFORM THE BEST VERSION IS THE ONE ON THE MAC'
Mark Gavini, Apple's games evangelist

Gavini adds that it's less expensive to market a Mac title too - due mainly to it being a smaller market - by a factor of up to 50%. He's also very keen to nurture the development of Mac-first software (such as Bungie's ultra-successful *Marathon* series) and is actively pursuing some of the big names in PC development where he thinks that the lure of (relatively) easy profits should be a big incentive.

One of his key initiatives, though, is increasing Apple's focus on Europe, where the company has a history of underperforming in relation to the US. 'That's why we're so keen to work with the European developers to do European-native titles, done by Europeans that will hopefully appeal to the European market.'

Part of the reason for this Euro-centric push is probably down to the imminent arrival of Pippin, a platform that Gavini interestingly speculates has more relevance to the European market than the American one. 'Pippin fits in actually a lot more here in Europe because there's more of an interest in the platform due to the



Freeverse Software's *Hearts Deluxe* uses speech recognition

Mac Sprockets

One of the keys to any future success of the Mac as a games platform lies in the Games Sprockets development APIs. 'The whole thing is about solving two different categories of issues with Macintosh and games,' comments Gavini. 'One is all the cool stuff and the other one is the obvious stuff that should have been fixed a long time ago. The cool stuff includes *QuickDraw 3D RAVE*, the 3D acceleration and 3D audio, speech recognition and things like that. The obvious things are things like a standard way to connect to a joystick, standard and easy ways of customising a screen, bit-depth and colour and resolution modes, hiding the menu bar and stuff like that. Those things should have been fixed a long time ago.'

Developed in conjunction with 25 of the top Mac developers, and having the Games Sprockets and game development kitchens in place, Gavini is bullish about the future. 'I'm not sure whose research it is, but for 1995 the Mac games market in the first quarter grew at over 300% and then for the rest of the year we were matching the *Windows* growth at 60 to 70% per quarter. I would expect that growth to continue – that we will either surpass or maintain the same growth rate of the *Windows* market.'

difference in the number of computers in the home market here. In the US they've kind of topped out, with about 45% of households in the States having personal computers in them, whereas here you don't find that high percentage. So, there's much more interest in a device that is computer-like and has the promise of doing a lot more computer tasks, but which falls in that same price range.'

Gavini also promises there will be 'quite a few' titles available at launch, a mixture of Pippin-specific software and Mac ports. Apple has taken great care in making the guidelines for Pippin development simple, and that, coupled with developers porting to what essentially is a known system (the *MacOS*), will hopefully prevent titles becoming bogged down at the beta stage.

'Once you get past the restrictions on the hardware, such as the amount of memory available and the fact that it runs off a CD – you can't have all this caching to the hard drive or whatever – once you get past that and you're able to convert your graphics to look good on a television screen, then there's really no problem in getting your titles over. Once they establish all that it's really quite easy. One of our developers brought over a CD that he developed without having a Pippin, because the guidelines were so clear and made it so easy to do. It booted up on a Pippin first time.'



Mark Gavini, Apple's games evangelist, believes the Mac is in a very strong position to attack the games market

'ONE OF OUR DEVELOPERS BROUGHT OVER A CD THAT HE DEVELOPED WITHOUT HAVING A PIPPIN, BECAUSE THE GUIDELINES WERE SO CLEAR AND MADE IT SO EASY TO DO. IT BOOTED UP FIRST TIME'

Apple has always been keen to point out that Pippin is more than a games machine. The problem is that other systems marketed along these lines as multimedia players, have failed conspicuously due to their purchasers also wanting gaming capabilities on a par with the more mainstream games consoles. How does Gavini feel that Pippin will compete in pure hardware terms against the Saturn, PlayStation or Nintendo 64?

'In terms of hardware capabilities I think it competes very well because of the PowerPC microprocessor in there and the graphics capabilities of the Pippin. *Descent* will be one title that runs on the PlayStation, Mac and Pippin. Another advantage of the Pippin is that it has SVGA so you can hook it up to a computer monitor and get the better resolution. We should be able to do pretty much everything they do. The only exception might be the custom graphics things that the consoles do because of their specialised chips.' **E**



Blizzard Software's Mac version of *WarCraft II* is also using Game Sprocket technology to enhance the conversion – additional 3D sound is already in place

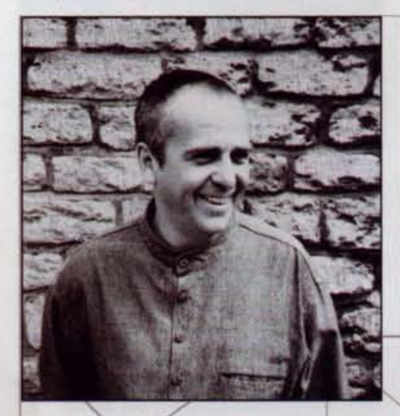




Real World explores the art of CD-ROM

eve

Peter Gabriel releases an ambitious project in the world of multimedia





Peter Gabriel (above) feels multimedia is a great tool for artists. The Real World recording studios (right) are hidden away in Box, a pretty village near Bath

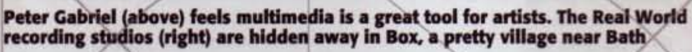




Two of *Eve*'s mysterious graphical domains. There are many more



Tanzanian Real World musicians, Hukwe Zawose, played during the launch of Eve



EVE IS AN INCREDIBLY AMBITIOUS PROJECT FOR GABRIEL AND HIS REAL WORLD STUDIOS. THE PROJECT CONTAINS THE WORK OF FOUR INTERNATIONALLY RENOWNED ARTISTS AND COST AROUND £2M

Multimedia stalwart and veteran pop musician **Peter Gabriel** has re-entered the CD-ROM fray with *Eve*, a project he describes as, 'an interactive music adventure which explores, in a playful way, the eternal riddle of the relationship between man, woman and nature.' In a packed press conference held at his Real World recording studios in Box (just down the road from **Edge**'s offices) the rock star outlined his intentions of giving everyone the chance to be an artist. 'Multimedia is a wonderful place for investigating art as a tool kit and that's the direction I want to see things go. People can then become part of the creative process in this way,' said the aspiring digital visionary.

The disc, previewed in **E**36, is essentially a point-and-click adventure, but with better music and some sumptuous visuals. The story revolves around Adam and Eve and uses them to examine mankind's search for love. During the course of the adventure there are several surreal visual worlds to explore and a number of Peter Gabriel soundtracks to find and listen to.

Eve is an incredibly ambitious project for Gabriel and his Real World Studios. The product contains the work of four internationally renowned artists and reputedly cost around £2 million to develop. But will the disc manage to recoup that investment when it is released later this year? The multimedia CD-ROM market is notoriously shaky and very few titles go on to make a considerable profit.

Gabriel's last CD-ROM, *Xplora 1* (see news, **E**5), was successful, but it was also released when the market was in its infancy. Although *Eve* looks interesting, it may take more than 'strange musical landscapes' and 'evolutionary gardens with natural portals' to prize PC users away from their copies of *Command & Conquer*.





Light and colour are used to great effect



Eve features work by famous artists. Cathy de Monchaux (right)



The user can employ this screen to embellish tracks with musical samples

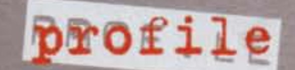
Contributing artists

Eve draws on the talents of four, highly regarded international artists - the late Helen Chadwick, Cathy De Monchaux, Yayoi Kasuma and Nils Udo - whose high-brow work is set against a backdrop of mellow rhythms. Hardly one for *Mortal Kombat* fans...

Juan Montes

PlayStation

Photography: Michael Donald



general manager of software development, Sony Computer Entertainment Europe

Back in 1994 Sony had few in-house software development resources. In Japan there were funded teams working under the auspices of SCE, while in the UK the situation was even less inspiring. But that was all about to change. The creation of *Total NBA* was the turning point Sony Computer Entertainment had been waiting for.

Which is where **Juan Montes** came in. Given the title of general manager of software development, it was Montes' role not only to set up a credible in-house team in London but also to ensure the quality of subsequent thirdparty releases. His initial decisions must have caused a little worry within the company. First of all he chose to recruit recent graduates for the team rather than hardened videogame veterans. Second, the first title to be developed under him was a basketball game: his totally European team actually had to be taught the rules before they could begin work on it.

The risks, of course, paid off. *Total NBA* was massive and the team's current developments, *Porsche Challenge* and *Rapid Racer* (see page 36) look set to follow it into the PlayStation hall of fame. Although much of this success is down to the talents of the designers, part of it is down to the atmosphere of creative freedom which exists in the London office, an atmosphere precipitated by Montes.

Edge What was it like when you joined Sony?

JM I was brought into the company two years ago when it was still called Sony Electronic Publishing. We had Psygnosis working closely with us and **Phil Harrison** and other people were doing all the evangelising to the development community, trying to get people to be aware of the PlayStation and to sign up as developers. My role at the time was to get the PlayStation out to thirdparty developers and people within the company.

Edge Part of your responsibility concerns thirdparty development. What is your role here?

JM When it comes to approvals we can look at products before they are finished and tell developers 'you need to do this and that' before it gets to the final date. The feedback I have had from third parties suggests we have done more than just a good job in this area. Our approach is, to some extent, more friendly – we work *with* them rather than against them.

Edge In what ways do you judge the designs that external developers submit to you?

JM We have a small group of people who I call game analysts: they evaluate every product proposal and every final product that comes to us. They don't accept or reject games or give them marks out of ten, what they do is spend plenty of time on the games trying to understand how innovative they are going to be when they're developed, how do they compare with other games on the market, how do they take advantage of the platform – are they 3D, are they realtime, etc.

Edge What are their backgrounds?

JM One of them is spending more time now in internal development so he's moving into the role of producer, one has been writing reviews for magazines for a number of years, another one works for one of the big retail chains buying products and dealing with publishers. I think having a buyer and game reviewer is a good mixture: the retailer will have to decide on money and shelf space, the reviewer is only interested if the game is any good.

Edge How do developers react to rejection? Are they happy with your conclusions?

JM Most developers think that what they are submitting is an 'A' product – how they react to criticism very much depends on who you're talking to. If you talk to the development manager, then they may not take the bad news that well, very often because they are under pressure to get the product out. We try to get people to involve us ideally twelve months before release so that we have a chance to comment. At the end of the day, though, they can do what they want: it's their money, it's their funding, it's their project. All we can do is give them the benefit of our experience.

Edge Do the game ideas that your own internal developers come up with go through the three game analysts?

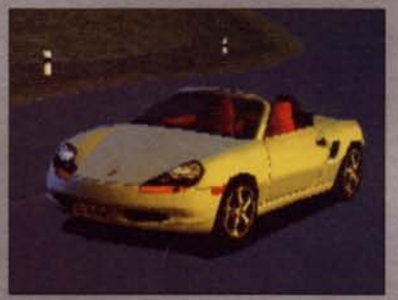
JM Yes. I get them involved in both the discussions and the reviews. I set up a discussion on the first Friday of every month, and at those meetings you can tell just by watching peoples' body language if, when an idea comes up, they don't like it, or are indifferent, or excited. If there's no interest, you soon know because the discussion ends. However, often ideas come up which prompt people to say, '...oh yes and wouldn't it be great if...' If that happens a lot, I ask the two people who are most excited by the idea to go away and expand on it, perhaps come up with character designs, so the next time we have more to show. This is where it's valuable to have the games analysts present: someone may say that idea was used in a game in 1989 – it's old hat. As an example, two or three people tried to come up with *Resident Evil* mixed with *Doom* – the ultimate game, with a good script, etc. But you have to put it to the test and ask, how will the camera work, how will you cope with the limitations of each game when you're trying to combine more than one genre.

Edge Given the difficulties in coming up with new games, why do you think the internal team has been so successful?

JM Because we concentrate solely on the PlayStation it is easier for us to achieve certain things. For most other developers, at the time they are designing the product and writing the code, they also have to think about writing utilities to move graphics from one platform to another. In our case it's all pretty much focused – we know what we can get out of the PlayStation; we may not know all the tricks, but we can achieve a much higher level of realism.

Furthermore, something we've tried to do is get a mixture of styles, most of our team are young and from the UK, but some come from Norway, France, Scotland, Italy. We've managed to employ a wide spread of different people who have a different approach, different ways of thinking – and this reflects in their work.





Juan Montes development team at Sony has two games in the pipeline – *Rapid Racer* (left), a water-based racing game and *Porsche Challenge*, based on the sports car (right)

Edge Your in-house quota of games per year is quite low – how do you plan to evangelise your ideas about quality PlayStation releases?

JM We're working closely with some external developers to compliment our in-house work. Right now we have three companies for whom we have funded projects: we want to get developers who think along the same lines as us, and, in many cases, who haven't made a big impact in the market yet. Through providing those developers with resources, equipment, plenty of production time and developer support, we're trying to raise the level of the content they are developing, so they can produce games with a similar impact as our own.

Edge Considering your success with *Total NBA*, are you going to stick with employing newcomers to the industry?

JM We're trying to employ people who challenge each other and who challenge me. We have lots of people from different backgrounds, and I think that's healthy – all the game ideas that we have in development or that we're looking at for the next set of products (I always like to have at least three ideas on the table at any one time) come from the people we have here internally. There's nothing within Sony which says that the senior management in Japan or anywhere else can tell us we have to do a game in this genre or by this quarter. Sony's a huge company that provides all the funding, but the rest is up to the people here – if you produce the goods, people leave you alone.

Sony's a huge company that provides all the funding, but the rest is up to the people here – if you produce the goods people leave you alone

As CPUs grow ever-more-powerful and incorporate the functions of specialised chips, former Silicon Graphics man **George Zachary** asks if the days of the dedicated graphics processor are numbered

More **MIPS** or more **chips**?



George Zachary, who, when working with Silicon Graphics, was interviewed in Edge 29, is now a partner at Mohr Davidow Ventures, a venture capital firm working in new technology

In the world of videogaming, most people believe that sophisticated gameplay and realistic graphics sell each new generation of software. In the world of semiconductor chips, most people believe that Moore's Law (performance doubles every 18 months) sells each new generation of hardware. Since chips perform the computations that act as the bedrock for gameplay and graphics, one can see that 'better' chips probably means 'better' games, especially given the horsepower-hungry computations necessary for the kind of graphic realism consumers demand. This leads to the current debate among hardware designers over whether current and future Pentium MMX processors can do the job alone, or will they continue to require graphics adaptors, and where in the computer's architecture the next generation of adaptors will reside. In my view, the CPU can't do it alone.

In terms of the game logic, running routines on the CPU is the wise choice, especially since there is a stream of general purpose CPU performance improvements coming that is perfect for game logic. When it comes to multimedia and graphics routines, however, you have a choice between either writing software routines for the CPU, or adding some form of speciality hardware. Applications and graphics routines, on the other hand, have such completely different instruction set behaviours that working from software quickly clogs a CPU's pipeline. On workstations, this is solved by adding an extra chip: a custom 3D graphics ASIC (application-specific integrated circuit). This chip enables the CPU to go on its merry way, computing the overall logic of the simulation, while the ASIC performs the polygon and pixel operations. The VGA adaptor in your PC at home performs much the same function when you move screens around in *Windows* – the adaptor handles moving the pixels, while the CPU is free to run the application.

But when looking at semiconductor history, it's evident that this kind of functionality passes through a process involving the underlying chips themselves. First, functions like polygon operations show up as custom ASICs. Then the function is taken over by more general purpose digital signal processors (DSPs) surrounded by custom gates. Functions then become built into the CPU with some off-chip custom gates. Finally, everything runs in the CPU except for any remaining analogue functions. As CPUs become faster and can handle more functions, the CPU becomes a black hole pulling in functionality from across the motherboard, and wins this functionality tug-of-war when it can accomplish the task 'good enough'. This is what happened to the floating-point co-processor chip market. This once prosperous market has been consumed by CPU giants because floating-point functionality was generic, necessary for a wide range of applications, and was neatly integrated into the microprocessor.

Now we find this happening to MPEG decompression routines. The market for hardwired MPEG-only PC chips is drying up as Intel's CPU starts to absorb more of the functionality. Even modem functions, sound synthesis, and 3D graphics functionality are now edging closer to the CPU blackhole. But they won't be consumed for a fundamental reason: one of the instruction set areas that multimedia requires is with multiply/add instructions, which makes up the basic staple of 3D polygon processing, MPEG intra-frame processing, and, not coincidentally, modem functions and sound synthesis. Until recently, this was the sole province of off-CPU accelerators. CPU manufacturers are trying to change this by offering basic multiply/add instructions as CPU enhancements, and, to an extent, this will result in more 3D polygons/second and more MPEG frames/second.

It won't begin to approach, however, the levels necessary for the higher quality images which will drive consumer demand, especially in the game market where the main attraction to buying the latest software is because it looks 'way cooler'. This is especially true when you consider that multimedia itself, much less a CPU-based approximation, hasn't even reached the 'good enough' point yet – that won't happen until multimedia looks the same on screen as it does in the physical world.

These higher quality images rely on complex pixel processing hardware which won't appear on CPUs. The reason for this is that pixel processing hardware needs a dedicated, multistage hardware pipeline, and a CPU is the worst economic and architectural place to put this pipeline. A general purpose CISC processor, like a Pentium, has an instruction set that must, by necessity, support a wide range of applications. Adding the very specific operations like multiply/add required for pixel processing simply loads down the CPU with instructions few applications will use (floating point operations, remember, integrated to the CPU so well because a wide range of applications could benefit). This also means that pixel processing must wait its turn in the processor cycle.

Therefore, there must be some form of multimedia accelerator to handle the high-quality images consumers want. Console vendors have figured this out already and have prioritised their silicon budget to multimedia processing, not CPUs. PC vendors will pick which broad multimedia accelerator to offer on the motherboard to compliment the Intel Pentium MMX. Expect one or two multimedia chips to survive by offering low prices (less than $150), broad multimedia functionality (including modem and sound functions, since they share instruction sets that are similar to pixel processing), and the support of the next mega-hit game.

In 20 years, CPUs may boast the raw speed to handle all pixel processing on its own. But by then we'll have moved from 2D pixel processing to 3D voxel processing, and the debate will rage over ways to accelerate those operations.



Zachary favours the custom chip approach to pixel-processing as shown in the SGI co-developed N64

Cyber shareware

With a Web site, a potential audience of millions can be reached, 24 hours a day, with very few overheads. For game companies, then, providing free previews of games on the Net must be the perfect advertising tool. Or is it?

Edge looks at the down side of downloading

Content:	Videogames
Address:	see below
Format:	Sites with videogame demos
Origin:	Global

Ever since the flashy WWW portion of the Internet became available, companies have predictably viewed the service as a massive, transglobal advertising opportunity. For software houses, providing downloadable demos on their Web sites has proved a major part of this opportunity. The benefits are, of course, immediately obvious. For a start, the game itself gets promoted – as **Colin Gordon** of Boss Game Studios points out: 'It depends on the game, but if you have a cool idea that's hard to get across, then the Web demo works. If the game is well received, then a lot of people will get to hear about it and play it.' A downloadable demo, then, can show things about a new game, and capture a potential buyer's imagination, in a way that words alone cannot.

Including downloadable elements on a Web page also attracts people to it. After all, most videogame sites are little more than glorified advertisements, packed with new release info – hardly particularly rewarding content. However, put a demo on the site and you're giving Net users something in return for their attention – it's like bait, used to reel in unwary consumers. Better still, if new demos pop up frequently, visitors have to keep visiting the site, so exposing themselves to the company's merciless, inexpensive advertising on a regular basis.

But the recent experiences of two companies have pointed out the hidden dangers of this speciously foolproof gimmick. To start with, giving away too much of a game can have a disastrous effect. Eidos Interactive, for example – the company which recently bought Core, Eidos and Big Red Software – blames the poor sales of PC title *Big Red Racing* on 'Internet overexposure'. A demo of the game was available from Eidos' Web site months before the official release and the decision to include a full multiplayer option was perhaps integral in both the demo's popularity and the full game's disappointing sales. *Big Red Racing* was, after all, most fun when played against other people – as this element was provided free, incentive to buy the finished product was minimal. Yes, the buyer would get extra tracks, but when you're racing against friends, you don't really care that much about the scenery. As **Paul Fox** of Eidos points out, 'Although the Net can be great for promotions, if you give away too much too soon it can be a problem. The *Big Red Racing* demo was an experiment, and, in hindsight, giving away the multiplayer element was a mistake.'

Sceptics could accuse Eidos of using the Web demo as a scapegoat: perhaps *Big Red Racing* didn't sell because of other non-Net-related reasons. However, **Stephen Hey** of Ocean agrees that demos can harm rather than help a game's sales: 'A few months ago Ocean undertook an extensive research campaign where we interviewed hundreds of people, gamers, non-gamers, parents, etc. One of the 'types' of people we discovered lived off demos from cover CDs and the Internet. If they really liked a game, they would wait for the budget release and buy it then. This type of consumer is worrying and dents the potential sales of a title.' Furthermore, users can often believe they have experienced a game to the full after seeing just a couple of levels. As Colin Gordon concedes, 'I for one got enough from the demo versions of *Duke 3D*, *Quake* and *Descent*, and have never bought them.'

One company which has, in the past, not suffered at all by providing multiplayer demo versions of its games over the Net is id. Although shareware versions of both *Doom* and *Quake* are freely available and have been distributed to millions of users, the company still saw *Doom* top the charts for months and *Quake* will no doubt do the same. This may be because id has enjoyed









***Quake* (top, right), ripped off by unscrupulous software pirates. *Big Red Racing* (above) suffered due to the comprehensive Internet demo**

Featured sites

http://www.bullfrog.co.uk/
Press releases, interviews and loads of text and grabs on forthcoming titles.

http://www.domark.com/
Although there are several downloadable demos and patches, this currently messy US site is in need of an overhaul.

http://www.gremlin.com/
The most stylish site **Edge** looked at. The retro page alone makes it worth a visit.

http://www.idsoftware.com/
The mother of all software company homepages. Download *Quake*, *Doom*, etc.

http://www.psygnosis.com/
Again, plenty of information about the company and new releases. You'll need *Netscape 2* to get the most out of this, though (the *Netscape 1* version isn't updated as often, apparently).



a rather unique relationship with Net users. Shareware versions of *Doom* and *Doom 2* were engineered to be easily hackable, allowing fans to create editors and build their own maps, and businesses have been set up to sell *Doom* WADs with no money going to the game's originators.

However, that relationship turned sour recently when a hacker managed to access id's internal network through the company's Internet connection. Hours later an unauthorised beta version of *Quake* was on the Web and id's previously benign stance on the freedom of the Internet and the easy accessibility of their code disappeared. 'These guys are supposedly fans of ours, then they steal from us like petty losers,' fumed id's **Mike Wilson** to Next Generation, 'They are just maggots on the mucilaginous dung pile of life.' Perhaps one of the dangers of offering so much for free is that people will take that philanthropy to mean everything is free. Could demos be breeding an underclass of 'petty losers'? Whatever the case, id's experience goes to show that even a company which has made free demos an integral part of its success is not immune to demo exploitation.

The *Big Red Racing* and *Quake* incidents highlight just two nightmare demo scenarios – there are others. Putting out a poor-quality early demo, for instance, may actually prejudice users against the product. No matter how often developers may point out 'this is an early demo' potential buyers will still have had their vision of the game tainted – the damage has been done. As for the 'downloadable demos are cheap publicity' myth, even that doesn't hold up to scrutiny. As Psygnosis' **Jim Drewry** says, 'One of the major disadvantages is support. With industry analysts telling us it costs us $5 per support phone call, a popular demo can cost much more than anticipated.'

Steve Leigh at Gremlin also points out that 'free demos' are not exactly as free as they sound: 'Our demos will be flagged with warnings for people with slow modems that they could be in for a shock when they get their next phone bill!'

There are alternatives to downloadable demos as a means of attracting gamers to Web sites. Gremlin includes a number of downloadable 'patches' on its site which add to already released games (owners of *Euro 96*, for example, can download the latest team line-ups and new commentary to go with them). Bullfrog is also looking in to providing a similar service. 'With *Syndicate Wars* we are hoping to put extra game levels on our site' says **Peter Molyneux**, 'and with *Dungeon Keeper* the plan is to put new levels and different characters up there. Hopefully this will both please existing players and encourage other people to purchase the full games.'

Gremlin, though, has gone further in the quest to provide non-demo downloadable content. Its site boasts a screen saver based on *Normality*, and, as Leigh points out, 'We've got a 'retrogames' page that contains selections from our back catalogue that run with Spectrum emulators. The first game we used was *Bounder* and this got a great response.' Fuelling the current trend for game nostalgia is a smart idea – just as likely to attract users to the site, but with none of the risk associated with demos.

However attractive the alternatives seem, it is not in the videogame industry's nature to retreat. On the contrary, it is likely that over the next few years downloadable content will increase dramatically. Colin Gordon preaches caution: 'I think everyone is getting really excited about the possibility of actually selling over the Internet – no packaging, no stock, no customs, all electric – it sounds really good. The problem is, the people who best know the Net are the same people who hack code. Giving this kind of person access to your product online is just asking for trouble...'

Net gaming

3DO is currently running beta tests for *Meridian 59*, a multiplayer 3D game designed specifically for play over the Internet.

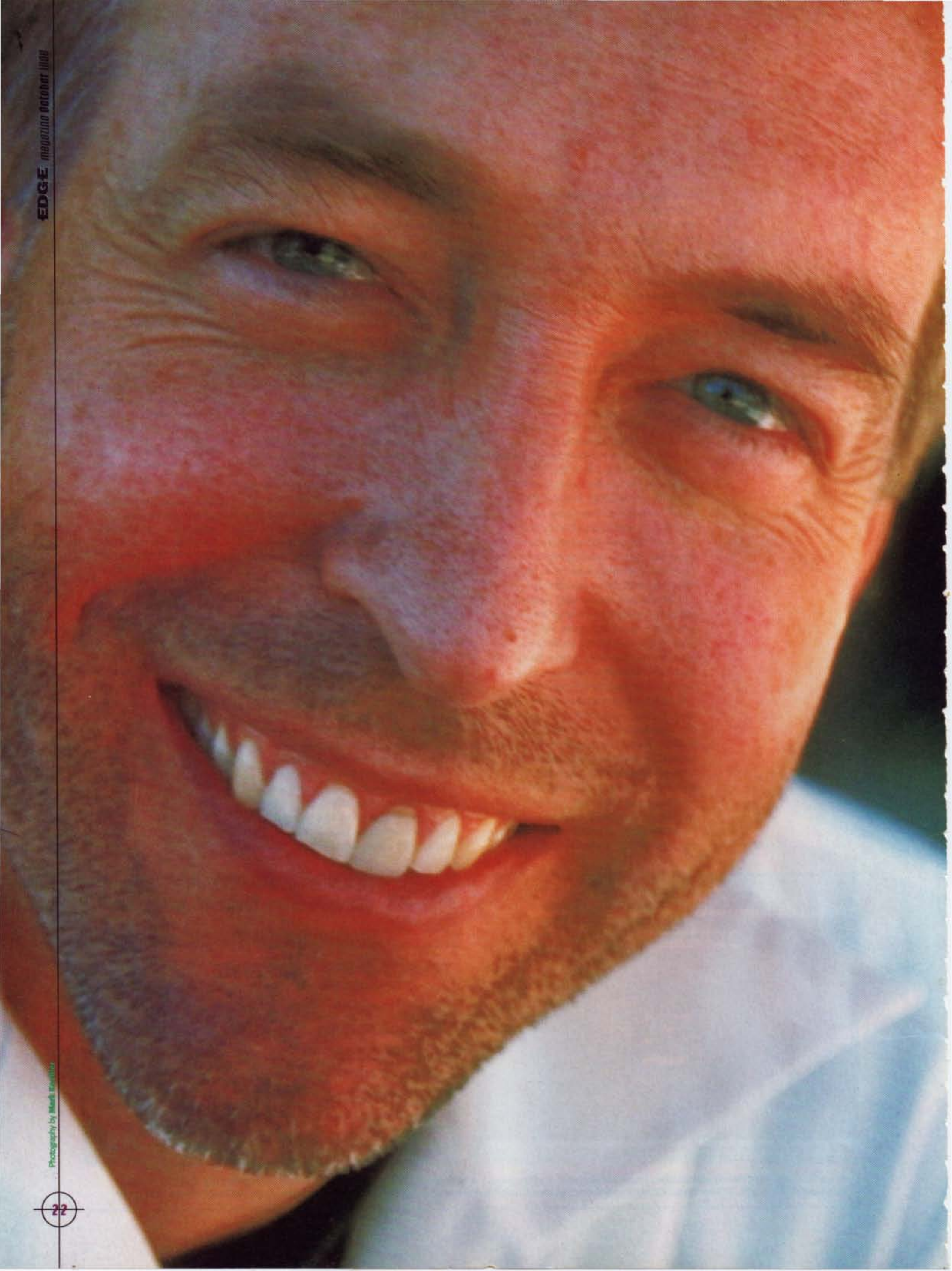
The game is essentially a MUD-style experience in which Net users build their own characters and then place them in a treacherous medieval world full of monsters, hidden treasures and locations. There are puzzles to solve and objectives to complete as in any other adventure title, but here, of course, players can meet up and interact with each other.

There are currently 17,000 users worldwide playing the beta version and many have already set up guilds with their own Web sites. Some players have even married within the game (with other users attending the 'ceremonies') – something that's either an illustration of *Meridian*'s ability to create a remarkably convincing artificial world, or a sad insight into the life of the average online gamer, depending on your point of view. Decide for yourself by visiting the 3DO site at http://www.3do.com. Edge will look at the game in more depth next issue.





Gremlin's site provides downloadable game patches and a retro page – will these replace game demos? Despite the potential dangers, most companies think not. 'It's an excellent way to get your game in front of a huge number of potential customers,' says Bullfrog's Peter Molyneux



Photography by

AN AUDIENCE WITH

eugene jarvis

There are few designers who made waves during videogaming's golden era in the early eighties and can still be found working on high-profile releases today. Midway's **Eugene Jarvis**, the face behind 1980's seminal shoot 'em up *Defender* and 1995's premier 'Nintendo 64' title *Cruis'n USA*, is one such rare individual.

Edge tracked down the elusive veteran at Midway's Chicago HQ to talk oldies, goldies and the future of videogaming

Continued next page

interview

Continued

As retrogaming becomes a greater force in modern videogame culture, **Edge** constantly finds itself comparing new games to old. Certainly, such pioneering classics as *Defender*, *Galaxian*, *Pac-Man*, *Robotron*, *Asteroids*, and *Space Invaders* were great fun at the time, and deserve massive credit for breaking new gaming ground. But compared to 1996's state-of-the-art, do they still really cut the mustard?

Naturally, the conclusion is that some still do, and some don't. But the debate is only destined to increase in vehemence as the retrogaming cult gathers more and more momentum.

One man who's had a videogame-insider's perspective from the very beginning to the present day is the outspoken **Eugene Jarvis**. Jarvis' *Defender* and *Robotron* are undisputed classics (he's even got his own fanpage - take a peek at http://www.cs.uregina.ca/~bakay/jarvis/jarvis.html), while his *Cruis'n USA* is one of Nintendo's key titles in the launch of the Nintendo 64 in the United States.

Edge met with Jarvis at Midway's Chicago headquarters to talk about classic games, old and new.

Edge Do you think that the old arcade games regarded as 'classics' have really survived the test of time? Or are we just looking through the rose-tinted spectacles of nostalgia?

EJ No, some of those old games really still are a lot of fun.

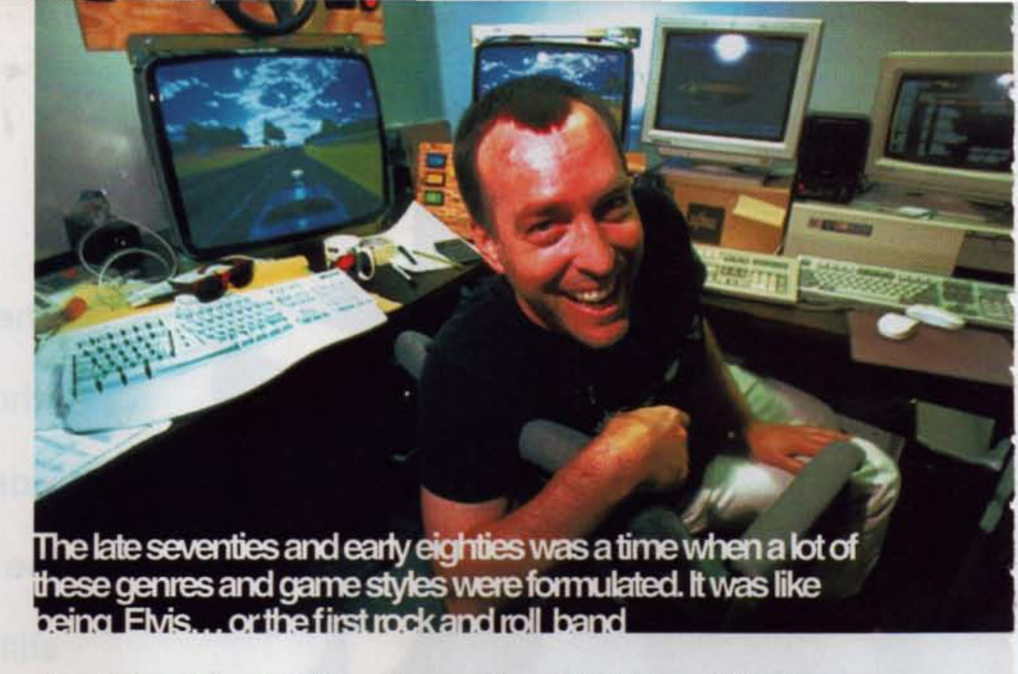
I'm kind of biased, but I still play *Robotron* two or three times every day. Some of the newer game designers who I work with - kids who are just 20 or 21 years old - are getting into *Robotron* for the first time. They are almost surprised to discover that it's got some great action, great play mechanics, and, perhaps most important of all, I think, great tension.

The essence of the videogame is survival of the fittest. When playing a game, it's the game versus just you and your survival instinct and that's the most powerful instinct a human being has. The will to live overrides everything.

So, in my opinion, the essence of a great videogame is to exploit that instinct, to really get the player's adrenaline going.

Edge Is this what makes so many of the old classics so exciting to play?

EJ Yeah. If you look at some of the classic games - *Asteroids*, *Space Invaders*, *Defender* - from that era of the early eighties and late seventies, they really exploited that survival instinct in a very simple and primal way. They were tapping directly into your brain.



The late seventies and early eighties was a time when a lot of these genres and game styles were formulated. It was like being Elvis... or the first rock and roll band

Edge Do you think today's videogames tap into this survival instinct as well as the old classics did?

EJ Well, in a symbolic way, 'death' is present in all games, in the sense that you can't continue playing. But maybe it's done in a less direct way. In *Cruis'n USA*, if you win the race you get to continue racing so you are driving as fast as you can to stay 'alive'.

But when you win the race in a lot of driving games, then a big screen just comes up and says 'Congratulations! Game over!' So that does kind of change the player's motive. Now you're after a score more than sheer survival.

Edge Many people believe that today's games aren't any more fun to play than the classics from the late 1970s and the early 1980s. These people argue that, certainly, today's games look better, but they aren't any more fun to play.

Do you believe this? And if so, shouldn't we have moved forward?

EJ Well, I think there were some damned good games back at the start, but I'd have to say that games like *Street Fighter II*, *Mortal Kombat* and *Killer Instinct* are pretty damned good, too. So I don't believe that all modern games are rubbish.

Edge But would you agree that modern, glossy games aren't necessarily any better than old ones?

EJ What you have to remember is that when games like *Space Invaders*, *Karate Champ*, *Pole Position*, and *Defender* were first created, they were the very first games in that style. Nothing like them had ever appeared before. We went from a blank screen to a game.



Now, *Daytona USA*'s leap from *Pole Position* isn't as big as *Pole Position*'s leap from nothing at all. So, perhaps it's inevitable that even though *Daytona USA* is a superior game, people aren't as excited by it as when *Pole Position* first appeared.

The late seventies and early eighties was a time when a lot of these genres and game styles were formulated. It was like being the first Elvis, the first 'rock and roll guy', or The Beatles. We had an open field, and the most obviously powerful concepts were soon exploited.

Since then, game designers have had little choice but to build on existing concepts as most of the choice virgin real estate was gobbled up years ago.

Edge But that doesn't mean that the gameplay has to stay stagnant.

EJ Sure. *Daytona USA* is essentially *Pole Position* with better graphics. We're not progressing on the game side, we're progressing with the simulation, we're progressing with rendering accuracy. But the game side is not really going anywhere.

Edge Another factor may be that, certainly with arcade games, it's important that people should immediately understand what a game's goals are and how they play it. With this in mind, it makes sense to make games similar to titles with which players are already familiar.

EJ Absolutely. In the arcades you need something that is very transparent, and something that novice players can pick up in ten seconds or less. So all this work's going into doing the same games better and better, while such great frontiers as, say, creating a game in which you can have a real conversation with a computer player, are left untouched.

Edge So where is the real innovation going to come from?

EJ That's a huge, huge question. And most



of the effort seems to be focused on just faster and faster hardware and more and more polygons. I think SGI basically designed themselves out of business with the Nintendo 64. I mean, who's gonna buy a $50,000 box when they've shown you can do it for 250 bucks? [laughs]. It's a great engineering triumph, but maybe the end of their company. And all the while I sit here saying, 'What does that mean for game design?'

Another big problem we face is that because videogames have become such a big business, a lot of people are putting out 'product', and not games. Games are designed by marketing suits, not designers. It's just about marketing. It's about, 'Get a big license, then hype it'. We're spoiled by having the most ignorant consumers in the world - parents who are buying things for their kids - so many people in the business believe that all you have to do is bullshit a parent who doesn't know crap about games into buying your box, and then you move on to another money-spinner.

Edge So where do you see hope?

EJ I look at *Doom*, *Quake*, *Descent* and *Duke Nuke 'em 3D* - games where we're getting into network play and the Internet. And eventually the Internet will be good enough that you can have some fun with huge, huge multiplayer environments.

But even this is retro. It's almost like we've become disenchanted with computer artificial intelligence and we've gone back to human opponents, which was actually the way videogaming started with *Pong* and *Space War*. It's like we've come full circle, and are again saying 'Wow, human opponents are really cool!'

Edge In addition to human opponents, do you think we will see a return to 'back-to-basics' game design?

EJ Probably. Certainly. I think there's a lot of disenchantment right now with 3D. At first it's like 'Oh wow, this is really cool! I'm in a car and there are lots of polygons!' But a lot of games end up being just infrastructures, they're just environments and not really games at all.

Sure, there are a lot of interesting graphics, there are 28 different ways to play the game, you can play it without traffic, driving backward, with a camera coming out of your exhaust pipe. All this stuff, and all these options, but it kind of all disguises the fact that there's really nothing... there's no game there. I call it 'geekware'.

It's the reason why you get so many options to design your own course, or fiddle with the game world. It's because the guy who was designing the game couldn't ever figure out anything that was cool, so he's having you decide it for him, instead.

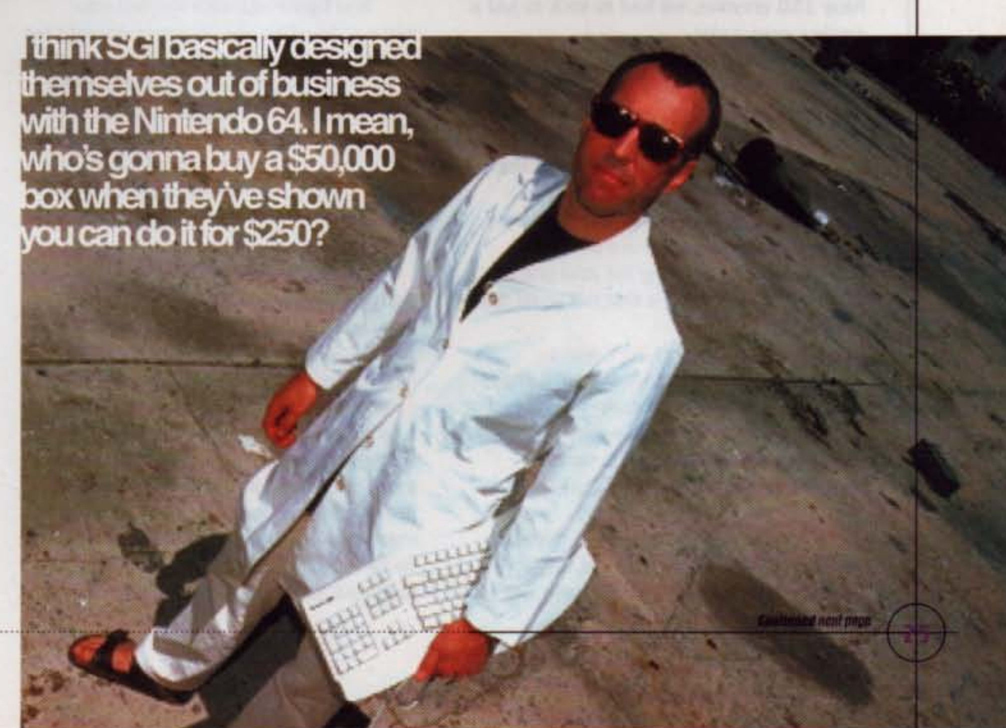
Edge So, is too much freedom a bad thing?

EJ Yeah. We forget that games are about limitations. Limitations are what really make games. Take the game of chess - possibly the greatest game of all. You're on this stupid board and you've got 64 squares, you can't move in three dimensions, you can't move off the board, and the pieces only move in certain, really horrible ways that are totally stifling to your creativity. Yet, here is this incredibly rich game.

Edge So should this same philosophy of strict limitations be applied to videogames?

EJ A lot of videogame design is about the limitations, it's not about simulating the freedom of reality. I think we're seduced by simulation. And, why are people playing games? Because reality sucks. That's why they're sitting in front of their computer and playing games. The real world is exactly what gamers don't want - they want something cooler than the real world.

Game designers have to decide what the hell it is that they're designing and what their game is. Many designers try to design an entire universe and end up with something very wide, but very shallow. But in truth, the games that are really successful are those that are very narrow, yet very deep. Games like *Tetris*, or *Street Fighter II* - which isn't really even two dimensional, let alone 3D. Both players simply walk up and down just the one line. And yet this is an extremely powerful concept, because once you limit the guy to that line, you make him face the enemy at all times. There's no getting away. And then, of course, coders can devote all their programming effort to all the cool nuances and all the myriad



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interview

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things you can do on that stupid one line.

But if I were to propose this game idea - *Street Fighter II*, remember - to some marketing guy - the guy who makes the decisions about whether the game gets made or not - and explained this concept in which players move in one dimension along a line, frankly he'd say 'This is the biggest pile of shit I've ever heard of. What the f**k are you talking about?'

Edge So you're saying that 3D games are fundamentally flawed?

EJ No, it's just that it's very, very difficult to do them well. One example that worked well was *Descent*, which I truly believe is a mind-expanding game.

Edge Here's a theory: do you think it's possible that in the same way limitations and not freedoms make a great game design, it was technological limitations that forced yourself and other game designers of the classic era to dig deeper into gameplay issues? Could it be that in the same way too much freedom in a game detracts from the gameplay, game designers of today are spoiled by hardware that enables them to create whatever world they choose? As opposed to having to work with just 2D, 16 colours, and simple environments?

EJ That is a very, very good point. With a game like, say, *Doom*, there are only roughly two or maybe three 'threats' onscreen at any one time. With *Space Invaders* or *Asteroids* there are 20 or 30 simultaneously. And Robotron carried this to the final extreme of putting 150 'threats' out there, converging on you from all sides. And with the limitations of the hardware, if we wanted to have 150 enemies, we had to stick to just a single screen game.

But that confinement turned out to be the essence of the whole play. You were trapped, you couldn't run away. You were there, they were coming, so make some shit happen or die! And by forcing you in that room, it really concentrates the game.

It's not that I'm down on exploration, but a lot of games today are all about exploration - discovering the cool graphics, mainly. And the result is that the game itself is diluted.

Edge What role do you think plot or storyline plays in a successful videogame?

EJ I think it is important to have a story. But it doesn't have to be a Hollywood script. You really just need a story that is simple, something that tells you why you're there and what you're doing.

The danger for designers is that they get hooked into their story, and they forget that storytelling is a linear, narrative type of thing. And the more you flesh out the story, the more you remove the interactivity, and the more you remove the player from the game. It's kind of like 'Oh, the outcome has already been determined. So what's the point?'

Stories should be regarded in the same way as soundtracks and sound effects. They support the game, enhancing the reality and the feeling.

Edge What is the one piece of advice that you'd offer new game designers?

EJ It's kind of what I said earlier. Designers shouldn't create an infrastructure, they should create a game, and work on the action. People spend so much time on the attract mode, and the title screen, and the FMV and all that shit, but instead they should spend time on the game itself.

The prime thing is the playing of the game. Make that cool. Put your work into making a rich, interactive, deep environment that the player can affect rather than all this packaging that just cloaks the product.

And figure out what the hell your game is. So often, we designers become too enraptured with simulation. We want to do so much. We want to offer this incredibly free world in which you can do this, and you do that, and you have this world and that world, and you can climb into the tank if you want to, and then you can become the prime minister and control the economy, and do all this shit.

But you only have so much time to design something, and so at some time point you have to decide if you're making 17 bad subgames or one really good game.

Edge Do you think that anyone other than a hard-core gamer can really design games?

EJ A lot of squares get really excited about videogame design when they hear that there are wheelbarrows of cash involved. But the bottom line is, if you're in it for money, your game is going to suck big time. To be a designer you've got to play games until your social life vanishes. You should live games, dream games, and die games in an all-consuming obsession. If you want to make cash, get into real estate, or pose in a suit from nine to five in some bloated 'corpocracy'. Videogames are way too much work.

If I'm interviewing an artist or coder and they ask about the retirement plan, I know they'll never make it. Their priority is a house in the suburbs, not game design. Basically, the Midway design studios are a high-tech dump. It's a warehouse converted into offices and cubicles. Nobody gets a window, cause there aren't any. The philosophy is if you want something cool to look at, make something happen on your computer screen.

Edge Who will design the next great game?

EJ The beauty of this business is that as a programmer, you're only as good as your last line of code. Right now, somewhere, there are these new guys in their garages, and they're just gonna totally blow away all these big, bloated corporations. It's great! ■





The Square route

Having made headline news with its desertion of Nintendo, the Japanese softco behind the legendary Final Fantasy series is exploring new avenues with Sony-branded hardware, to similarly dramatic effect. Edge goes square-eyed in Japan



Grow or die. If biological models are equally effective in describing commercial organisms, Square of Japan appears to be engaged in an explosive process of genetic diversification. Having wrested the domination of the console RPG market from long-term rival, Enix, Square's tendrils are now extending rhizomatically into other areas of the videogames industry.

A string of quality 16bit titles, adored by the fans and respected by the competition, has provided the company with the vital resources to proliferate. Where it lacked expertise – in the field of beat 'em ups, for instance – it simply bought the necessary experience by recruiting former Namco and Sega talent to work on *Tobal No.1*, its first stab at the fighting genre (see testscreen on p86). Further ventures will include a 3D space shoot 'em up, a strategy wargame and a one-on-one samurai sim.

A considerable investment in its staff appears to have produced a fertile and creative working environment, and the company can now entice the finest game designers in Japan to work in-house. Indeed, Square's current outlay on development is enough to make jaws hit floors. Taken per head, the amount it spends on computers and software alone works out to around $80,000 per programmer and up to $230,000 per artist, making it SGI and *SoftImage*'s largest Japanese customer. It's been widely reported that it regards any of its games which fails to sell a million copies on home turf as a complete flop, but with these heady figures you begin to appreciate the seriousness behind such boardroom bravado.

The company doesn't tighten its pursestrings when it comes to marketing and promotion, either. Packaging a demo of your forthcoming games with the current release is one of those exquisitely simple ideas that leaves you wondering why nobody thought of it earlier, but that's exactly what Square has done with *Tobal No.1*. Eager Japanese fans who bought the game this August found it included a second preview CD with brief FMV movies of *Bushido Blade*, *FF Tactics* and *Saga Frontier*; but most exciting of all was a playable demo based on the opening scene of *Final Fantasy VII*. 'We've been working on *FFVII* for about seven months,' explains **Hironobu Sakaguchi**, chief *FF* producer and a founder member of Square. 'You're probably thinking that's pretty short, but we have a lot of resources – we have at least one hundred people working in-house – into completing this within a given time frame.'

Although Square is presently developing no less than ten PlayStation titles, its plans for the West would seem to focus on the lucrative PC market. PC conversions of PlayStation and back-catalogue SFC games are scheduled for Stateside release starting in the first quarter of 1997, with a line-up that includes *FFV* (whose SNES translation was shelved in 1994) and *FFVI* (released on the SNES in the US as *Final Fantasy III*). A firm date has yet to be announced, but *FFVII*'s US translation is likely to tie in with this North American sales strategy.

Sakaguchi dismisses the rumours that Square might one day return to the Nintendo fold with a *Final Fantasy* game, despite the possibility of a writable storage medium. 'The 64DD offers about 60Mb. We need about 1,500

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Welcome to the city of Makutushi, a literal translation of which would be 'The City of Bright Magics'. This image from Final Fantasy VII *suggests an alternative technological revolution, very much in keeping with the steampunk trappings of its predecessor*

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Hironobu Sakaguchi, producer of the *FF* series and a founder member of Square. The headquarters are based in the Meguro district of Tokyo

Final Fantasy VII has, in Europe, never been more than a cult interest among grey import gamers





Low-tech airships are a stalwart of the *FF* universe, capturing a national obsession with alternative flight and Laputan islands

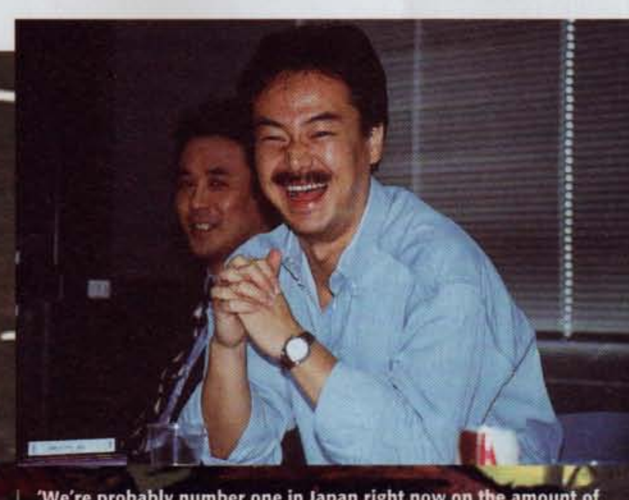
SQUARESOFT

Mb for *FFVII*, and we're already squeezing it into two disks, maybe even three. So obviously it would be pretty impossible for us to do this for the Nintendo 64, even with the 64DD… We did very, very carefully research which platform was most viable for our purposes, including the N64 and Saturn, but we decided that the Playstation was most suitable.'

Final Fantasy VII has, in Europe, never been more than a cult interest among grey import gamers. In Japan, the popularity of Square's roleplaying series is such that it's conceivable some gamers have bought *Tobal No.1* solely for the chance to experience the introductory scene of *FFVII* that accompanies it.

The playable demo gives just one mission, in which the player guides the 'Avalanche' resistance fighters to sabotage a power plant in Matsukushi as part of a plan to defeat their mysterious enemy called Makulo. The finished version will apparently include a wide range of manipulable camera angles with which to view the battles (those in the demo are predetermined).

It's now clear that the *QuickTime* demo which became widely available after last year's Siggraph convention was nothing more than a PR tool, as it bears little resemblance to this preview offering. Nevertheless, Square's reputation for stunning visuals hasn't been diminished by the move to unfamiliar hardware.



'We're probably number one in Japan right now on the amount of money spent on SGI machines' Obviously he hasn't seen the invoice





Claud, the game's hero, explores a shanty town. The only other characters revealed so far are Aerith, a quarterstaff-wielding witch; and Barratt, a hulking outhouse of a man who boasts a Gatling Gun in place of his right hand. Fans hope that many more will make it into the finished game

Unlike *Resident Evil*'s claustrophobic camerawork the viewpoint often retreats to give a stunning vista







Saboteurs enter the city by train in *FFVII* (top). When the player resorts to Aerith's 'call magic' (raising a serpent) the result is pure anime

Reassuringly, producer Hironobu Sakaguchi's desire to create a game that looks like a movie has meant the application of cinematic scripting and direction rather than FMV and thirdrate actors. The technique uses Gouraud-shaded polygon characters in a scrolling prerendered environment, though unlike *Resident Evil*'s claustrophobic camerawork the viewpoint often retreats dramatically to give a stunning vista of streets and buildings. Every backdrop is also 'live' in some respect, boasting details such as neon billboards, churning ventilator fans and hissing steam pipes. When the action shifts locations or reaches a predetermined cut-scene, CD access is almost invisible. With over 100 designers at Square's Meguro office dedicated to this game alone, *FFVII* is likely to set standards that other companies will struggle to meet.

After Square's much-publicised break-up with Nintendo there was little doubt that storage medium was a deciding factor, and the sheer quantity of graphical data involved means that *FFVII* will now occupy at least two CDs. 'CD-ROM as a medium is very beneficial to the software creators,' says Mr Sakaguchi. 'Of course, you've seen what it does on the graphics side. But it also has a very clear sound. And if you're not chintzy about increasing the number of disks, you can increase your capacity to what your creators require.' It's thus ironic that the saving of game files has since proved a minor headache for Square, with the standard PSX memory card apparently unable to store all of the information required. It's currently working with Sony on a solution that will necessitate either two memory cards plugged in simultaneously, or a new card with a greater memory capacity.

FFVII retains the 'Active Time Battle' concept. All combat is menu-driven but a time gauge for each character indicates whether they are busy or can be assigned new orders. The enemy will continue to attack in realtime whether you act or not, so quick decision-making is rewarded. The only obvious new feature is the limit gauge, which increases every round and allows a special ability to be invoked when full. In all other respects, the interface has changed little since the *FF* games on the NES. Even quirky old-fashioned RPG conventions – sudden random monster encounters, for instance, and one character graphic representing the



Combat is central to the *Final Fantasy* experience. Every encounter occurs randomly (players still can't 'see' the monsters coming, alas) whereupon the game switches to an arena format, utilising backdrops that represent the current locale in a rather general fashion

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As with earlier games, *FFVII* retains the odd convention of using one character to represent the whole party between battle scenes rather than displaying all of the characters in tow (unlike *Secret of Mana* or later *Ultima* titles)

whole party outside of battle – have survived the move to the PlayStation.

Because of the Japanese pre-occupation with such minutiae, character rosters are normally revealed in Square's initial press releases. Yet even at this late stage, they've failed to announce more than three playable characters. It could be that technical limitations have forced a compromise, but if this is the case then many fans will be truly disappointed. Its predecessor boasted a line-up of no less than 14, including two secret characters, all of whom had histories and side-stories for the player to explore and extrapolate. What's more, the depth of the battle strategies was in no small way a consequence of being able to choose whether your adventuring party contained thieves, knights, healers or mages. Given the repetitive nature of the combat sequences – admittedly an acquired taste – the potential reduction in complexity may prove detrimental.



Rural idyll: conceptual art shows Square's designers taking a few tips from Constable

FFVII's starkly vivid rendering and genuine orchestral score present a harder realistic edge than before

It's also hard to deny that the series has exchanged a little of its charm for 3D slickness. *FFVII*'s starkly vivid rendering and genuine orchestral score present a harder realistic edge that's a far cry from the endearingly blocky sprites and chip-generated music of the SNES. Previous games had also utilised the illustrative talents of anime artist **Yoshitaka Amano**, but his flamboyant portraits weren't considered appropriate for the necessary simplicity of current polygon-based characters. This isn't likely to bother newcomers to the series, however, and even the most stubborn of followers will have to admit that the sheer power of *FFVII*'s imagery more than amends for this small sacrifice. Mr Sakaguchi doesn't believe anybody will be disappointed by the final result. 'We're not kissing up to the mass market in any way. In Japan, our last title sold something like two million units, so we've got a mass market right there. We endeavour to create the highest quality



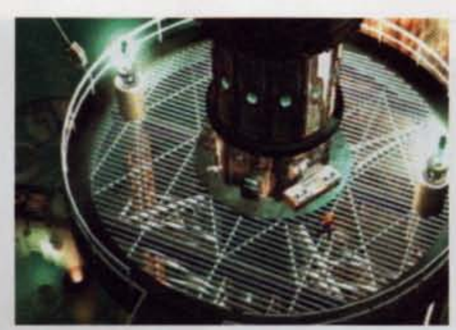


As with previous titles, *FFVII* promises hundreds of varieties of monsters with differing strengths and weaknesses to learn









Cut scenes and dialogue are an integral element of Japanese-style roleplaying, but, fortunately, Square's programmers have succeeded in eliminating the intrusion of CD animation. Disk access is almost imperceptible

games possible, and as a result we believe we'll be able to involve larger quantities of players without disappointing the original gamers.'

Given the resources being invested it's evident that Square considers *FFVII* its most important project to date. Nevertheless, it will be the enticement of the storyline and the depth of the tactics that ultimately determines its status. As long as the narrative is able to match the intrigue, humour, tragedy and melodrama of its forerunners then fans can only look forward to a translation as soon as possible.

In terms of fighting games, Square already has *Tobal No.1* under its belt. Second in the line-up is *Bushido Blade*, in many respects marking a radical break with the recent tradition of fighting games. Centring around sword-based combat, the notion of energy bars has





Despite their next-gen rendering, fans will recognise the Chocobo stables and traditional RPG shop (upper and lower)

An Interview with Hironobu Sakaguchi

While visiting Square's HQ in Tokyo, **Edge** interviewed the legendary Hironobu Sakaguchi, one of the founders of Square and the chief producer and designer of the *Final Fantasy* series.

Edge How long have you been working on *Final Fantasy VII*?

HS For about seven months. You're probably thinking that's pretty short, but we've put a lot of resources – we have at least 100 people working in-house – trying to complete this within a given time-frame.

We believe we're probably number one in Japan right now on the amount of money spent with on Silicon Graphics machines, and we've recently been rewarded by Microsoft for our high sales volume of graphic software!

Edge Other than improving the graphics, how has the 32bit technology of the PlayStation enabled you to make this gameplay better than in previous versions?

HS As a hardware platform, the computing functions are that much more elaborate. So, as a programmer, if you have a nice machine, you can do more in terms of software creating and expression. Apart from that, CD-ROM as a medium is very beneficial to the software creators.

Edge The text and the dialogue in the game are still text-based. Was there ever a plan to use CD-supplied voices?

HS We feel it's important to concentrate on the speed of CD access during the game, and the CD can only read one thing at a time. We have to try to predict forward and anticipate the possible things the player can do next, and to do that kind of calculation we can't use the CD for something else, like voices. With something like DVD or some other future media, this problem could be solved – if we had the ability to access two locations at the same time.

Edge Do you believe that real voices could enhance the characters' personalities?

HS I believe that it could. In the meanwhile, enhanced graphics could enable players to read the character's emotions, so perhaps text would still be sufficient in some situations. You can read a lot just by seeing the expressions on characters' faces.

Edge As a game creator you must be quite excited by the possibility of a writable storage medium, such as Nintendo's 64DD?

HS Sure, it can be exciting, but that depends on what kind of game you're trying to create. For the *Final Fantasy* series, we want to create an interactive movie, in the sense you can walk into the movie and be a part of it. This means that the graphic quality is very important.

Edge Square has hired a lot of 'Hollywood' talent, and people from the movie business. These people are skilled at telling linear stories – not interactive entertainment, so what can they bring to gaming?

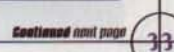
HS Most of the people who have moved to Square from Hollywood are computer graphics people, and they are involved in not just drawing but the programming side of art. These people came to Square with a frustration that movies are simply not interactive. Programmers want interactivity. They're doing what they are doing because eventually they want to create interactive entertainment. They feel that by coming into the game industry, they will be able to fulfil that side of their dream.

Edge It is hoped that *FFVII* will attract many first-time gamers to the RPG genre. Has gameplay been simplified at all to accommodate these novices?

HS Certain parts of the game have racing elements, and other non-RPG game factors. So, yes, there are some goodies planned to interest non-RPG gamers.

Edge Why are role-playing games more popular in Japan than elsewhere?

HS That will change at Christmas when *FFVII* comes out [laughs]. I think that, in Japan, anime and manga culture, cultivates and sustains the RPG.


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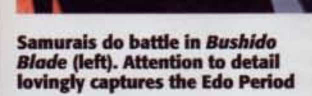
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Samurais do battle in *Bushido Blade* (left). Attention to detail lovingly captures the Edo Period

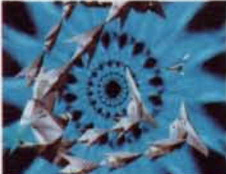
Bushido Blade boasts a vast sprawling environment and grants the freedom to run around

been abandoned – a full contact strike with the blade almost always means instant death for the victim. The emphasis thus shifts to a strategy of parrying, feinting, counter-attacking, or simply biding your time to wait and watch for a gap – real or faked – in the enemy's defence.

Another genre cliché relegated to the wastebin is the tournament, a format that has surreptitiously laden every fighting game with the same conceptual baggage. Most obvious is the absence of a timer, limiting the length of a bout, but there are further ramifications. Whereas other games present a fairly restricted gladiatorial arena within which their fighters must remain or suffer a penalty, *Bushido Blade* boasts a vast sprawling environment and grants the freedom to run around, circle the enemy, even lure them into an advantageous position before settling on the exact point of engagement.

Combat can take place anywhere within the walls and grounds of an ancient and exquisitely detailed Japanese castle. Torii gates, lanterns, bamboo thickets and paper partitions constitute the authentic decor, but many features are also obstacles that can inhibit the player or be exploited to effect within the game. A choice of weapons results in different fighting styles, thus ensuring that its depth isn't limited by the number of characters on offer.

Because of its audacity and ambition it's hard to predict how well the game might play. Historical accuracy can hold some appeal in its own right but *Bushido Blade*'s success or failure will rest solely on the integrity of its battle system, and its developers have to tread a very fine line in establishing its level of sophistication. Make it too complex and you deter all but devoted fans from learning the skill of swordsmanship; too









Square also has *Zauver* in the works – a PlayStation 3D shoot 'em up which bears no small resemblance to *Starblade*. Currently believed to be less than 10% complete, its RPG-esque storyline will have a non-linear gameflow based on players' narrative choices









More turn-based strategic combat is promised in *Final Fantasy Tactics* (above). Summoning a dragon results in an area-of-effect 'airstrike' (right)

accessible and you end up with a version of scissors-paper-stone.

When Japanese

softco Quest finally released its *Tactics Ogre* earlier this year after interminable delays, it rapidly became a Super Famicom best-seller. With no small amount of perspicacity, Square immediately commissioned the game's developers to create a similar strategy RPG set in its own *Final Fantasy* multiverse.

On first appearances, it's actually difficult to tell the two games apart. **Akihiko Yoshida**'s character designs have appropriated familiar *FF* archetypes in the distinctive *Ogre* style, the turn-based combat being played out with detailed sprites rather than true 3D models. Only the ability to rotate the isometric battlefield and view it from many angles gives any indication of the 32bit hardware involved.

Although the emphasis is firmly on skirmish wargaming, a roleplaying element exists in guiding the career paths of the characters: this 'job making' feature allows the player to allocate special skills from a choice of over 400. Square insists the difficult and tedious aspects of strategy gaming have been eliminated from *FF Tactics*, though it's unclear if this refers to the difficulty grade or simply a more ergonomic interface.

Square's final new PlayStation title *SaGA Frontier* is based on a lesser known RPG series that first appeared on the Game Boy. Only one *SaGa* game (confusingly translated as *Final Fantasy Legends*) has ever been released in the West: although it bears superficial similarities to the *FF* line, it's generally believed that the greater complexity of *SaGa*'s 'Free Scenario System' would make it less accessible. *SaGa Frontier* continues this tradition with a plotline that's subtly influenced by every choice the player makes. Rather than 'levelling up' automatically, characters must be raised and nurtured, teaching their skills to others as well as learning new ones.

At this stage, *Frontier* is clearly less complete than its *FF* stablemate – extensive scaling and rotation techniques witnessed in the demo give rise to some occasional blockiness, while

***SaGa Frontier* continues the SaGa tradition with a plotline that's subtly influenced by every choice made**

the prerendered environments, though impressive, demonstrate little progress beyond Square's achievements in 16bit. But **Kenji Ito**'s score conveys the appropriate sense of depth and grandeur befitting the style of *Frontier*'s gameplay, and without serious competition this could become the second best RPG on the PlayStation. E



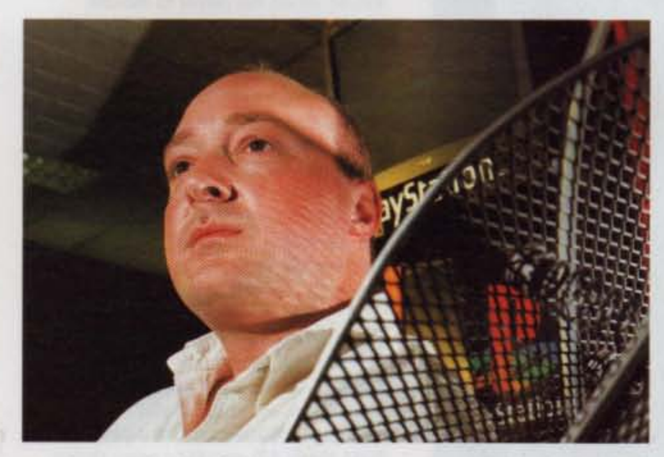
Though created in the same fashion, *SaGa Frontier*'s prerendered environs adopt a more colourful, playful, almost *DKC* style

Sony Computer Entertainment

Can the team responsible for *Total NBA* repeat its initial success or was it just a case of beginner's luck? Edge investigates the efforts of Sony's London-based team of internal developers

The best thing about releasing a near perfect first game is that you instantly cement a reputation for quality. The worst thing is having to live up to it. That is the challenge now facing Sony's in-house development team – a group of 30 programmers, artists and designers, based in London's notorious den of iniquity, Soho. The team currently have two projects well into development – *Porsche Challenge*, a racing game based around Porsche's forthcoming Boxster sports car; and *Rapid Racer*, another racing game, this time set on water. The 'near perfect first game' these titles must live up to is of course *Total NBA*, a masterful videogame interpretation of basketball and one of the best PlayStation games to date. Not a bad effort for a group who had never worked on anything together before and which, at the time, consisted mostly of recent graduates.

But Sony must have had a lot of faith in the group. After all, the company's aim in setting up an in-house team was to produce showcase software for the PlayStation – it must have seemed strange to give this



General manager of software development, Juan Montes (top), rendered shots from *Rapid Racer* (top left) and *Porsche Challenge* (top right), senior producer, John Roberts (above)



Sony's in-house team spent a whole six months perfecting the water dynamics for *Rapid Racer*. Consequently, elements such as waves and turbulence will play a realistic and important part of each race. The game is still in its early stages, visually – more landscape detail will emerge soon whereas the *Wipeout*-esque typography is apparently going to be shelved



responsibility to a bunch of students fresh out of uni. Furthermore, the in-house team have been given a lot of creative freedom. With it, they evolved a very specific philosophy toward game development. 'In *Total NBA* we established a style and a vision of the type of games we'd like to develop internally', explains **Juan Montes**, general manager of software development, 'and that's a mixture of trying to aim for a very high level of realism and using the PlayStation to the maximum.' Along with technical innovation, though, Montes is keen to stress the importance of playability in any game concept discussed by the team. 'You cannot forget gameplay, because as soon as you lose that you end up with nothing but lots of nice pictures.'

The philosophy does not restrict itself to the type of games developed, but also takes in how they should be developed and who gets a say in the process. As Montes points out, 'Anyone can come up with the next "hit game" so I arrange a discussion on the first Friday of every month and in that discussion we usually have between 12 and 15 people. Everyone is invited to attend, it's not restricted to game designers or producers – it's a lot more open. We have someone who works in the print department who plays a lot of games and has a lot of ideas – he



There will be 25 circuits in the finished *Porsche Challenge*, including the famous test track in Stuttgart. Landscapes currently look empty

usually comes along. You should not inhibit the natural creative process that exists within the industry.' In other words, Montes believes in recruiting people who may not necessarily be the most experienced or the most expensive – he recruits people who have a passion for games and a few good ideas. It's also a very communal way of working – the last thing you'd expect from an in-house team within one of the biggest

'You cannot forget gameplay – as soon as you lose that you end up with nothing but nice pictures'

Juan Montes, general manager of software development, SCEE

corporations in the world. 'It's very important to build up strong and compact teams where everyone counts and responsibilities are clear,' points out Montes, 'No overheads or indirect management. Everyone is a team player.' Is this communism infecting Sony's capitalist behemoth? Of course not, the atmosphere of the community is geared toward financial success and product perfection. It is a task which the group has taken seriously ever since the first few of them assembled around the time of the Autumn ECTS in 1994.

Both *Porsche Challenge* and *Rapid Racer* have been in development for months, even though the games are far from complete – the concern in the initial R&D stages was to explore the advanced technical aspects of the titles fully so that drastic changes would not have to be made at a later date. It is this attention to detail and concern with pushing back the boundaries of the PlayStation which marks Sony's team out as a seminal development group and has led to their success. But can the present projects possibly live up to the standards set by *Total NBA*? Sony thinks so, and the company's rhetoric, as always, is highly persuasive.

Although *Total NBA* is undeniably the best basketball sim on the PlayStation, the game's success must have been at least partially due to the fact that it was also the first. *Porsche Challenge* has been preceded by dozens of racing titles – so can it make the same impact? Sony clearly thinks so. 'It's a good example of a racing game,' points out Montes, 'the design includes interactive music, interactive tracks, realtime lighting for the highest level of realism and excellent

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driving control. It's also fun to play and has endless appeal. Technically, we started R&D very early in development and reached all our targets. We didn't make any concessions on quality.'

Of course the main coup for Montes and his team was to secure an official license from Porsche. Through the agreement, the game's designers were able to work closely with the influential sports car manufacturer to create an accurate representation of the Boxster, both in terms of look and performance. The result is an incredibly detailed in-game model which not only resembles the real thing but also looks good enough to appear in a prerendered sequence (producer **Pascal Jarry** was rather furtive, but claimed that between 400 to 500 Gouraud-shaded, textured polys are used). But will such graphical luxury slow the game down? Apparently not. The designers are aiming for a 30fps frame rate and the engine was smooth in the early incarnation **Edge** saw.



However, there was very little landscape detail on show in this version, a situation which the artists insist is temporary. A question mark, then, still remains over the final frame rate.

Away from speed concerns, attention to detail has opened a few stylistic doors for the designers. One of the most noticeable elements of the Boxster is the fact that it is a convertible, and the Sony team have capitalised on this by giving the player a choice of six different characters to sit behind the wheel, à la *Power Drift*. Each of these characters has actually been motion captured

Sony were privy to collateral Porsche information, including the dimensions of its complex test track

and they all have their own distinctive movements during play. It's a superficial detail, but may give the game a more leisurely look, providing a distinct aesthetic contrast to the overabundance of more serious sporting racing games already available.

The realism evident so far in the project doesn't stop at the Boxster itself. Sony were privy to collateral Porsche information, including the dimensions of the company's famously complex test track in Stuttgart. As a result, the track is included in the game along with 24 other circuits, split into five different courses. As for gameplay, the title is at such an early period of development this is still an unknown factor. Sony has



Juan Montes: 'It's very important to build up strong and compact teams where everyone counts and responsibilities are clear'

confirmed that there will be a split-screen twoplayer option, which should add much to the game's appeal, and the interactive circuit feature sounds interesting – fast drivers are rewarded with hidden short cuts and bonuses, but other racers will be able to find other short cuts to catch up. The designers also claim that there are myriad other secrets and cheat modes within the circuits for players to discover.

There are further features which mark out the title. For example, *Porsche Challenge* features an 'intelligent' catch-up feature which allows players who are straggling behind to make more mistakes and to have a higher top speed. Impressively, the leader cannot lose his position because of the catch-up system – he'll only lose it through his own bad driving. This AI achievement is a significant advance. In most games you can stay behind the leader until the very last second and then use the catch-up to



The Porsche Boxster model that appears in the game is accurately based on the real vehicle which is due to appear on the roads late this year. The 3D model is constructed from between 400 to 500 polygons and then Gouraud shaded. The designers of the game apparently worked very closely with Porsche to ensure authenticity. In the finished game, each of the cars will have its own motion captured driver, rather than zooming around the track with no-one in them

zoom past and over the finish line, hence eliminating any competitive spirit.

It is clear, then, that the team are not relying solely on the Porsche license to attract gamers. Although this has of course been well exploited, many small refinements to the racing genre are being made within the game – the company's sights are thankfully set on higher things than making an easy buck. Having said that, Sony seriously knows how to milk a money-winning formula. It is, for example, running an in-game 'win a Porsche Boxster' competition – probably the best way of marketing a game to 18 to 30 year old males apart from offering them the chance to sleep with Claudia Schiffer.

Whereas *Porsche Challenge* has a ready-made audience of fast car lovers, *Rapid Racer* will have a lot to prove when it is released next year. Water racing games seem to be a new-found game genre, and with NCL's imminent *Wave Race 64* and a slew of jetskiing coin-ops appearing soon, comparisons will be inevitable. It's a challenge which has been taken seriously by Sony. As Montes explains, 'With *Rapid Racer* we spent six months modelling the water, how it moves, etc, to try and make it as realistic as possible. Consequently the water is not just made out of sprites that always move in the same direction whenever you go to the same place. We studied how immersed objects affect water and how they affect things around the water like rocks, etc. We also looked at how spray is produced when you have something touching the water. We tried ways of capturing water movement that were very effective, but took up too many cycles for the machine, so we then looked at other ways where you could still have a similar level of realism but with more optimised code.'





The Sony team's offices located in downtown Soho. Many found it difficult to accept that *Total NBA* was made in London not the US

The result of all this experimentation is an incredibly complex series of water courses, each alive with complicated liquid currents and swells. Elements such as spray, wakes and waterfalls are also included and all of these affect the handling of the player's boat as it competes. Smashing though a wave, for example, will slow the boat down, as will getting caught in the turbulence of another boat's wake. It's an attempt to provide a real watersports experience, rather than just having a blue road and hoping no-one notices it doesn't move.



John Roberts, senior producer at Sony. 'Total NBA was our first product and we want every title to get the acclaim it has had'

To accompany the advanced water physics, *Rapid Racer* offers a similar list of attributes to *Porsche Challenge*. The vehicles are detailed, texture-mapped models and the circuits (there are 18 placed over six courses) all feature hidden shortcuts and cheat modes to add to the longevity. As with *Porsche Challenge*, the courses are at a very early stage so it is difficult to assess the game graphically. The interactive water does look rather strange at the moment – although it is clear that there are currents moving independently of each other, the water still looks flat, like some kind of trippy texture effect. Have Sony been forced to sacrifice aesthetic concerns in favour of realism? Later versions are bound to provide an answer.

Almost inevitably, despite Sony's new interest in the racing genre, *Total NBA* has not been laid to rest. *Total NBA '97* is currently also in development and Montes promises improved motion capturing and new moves based on those performed by real basketball players. **Edge** saw an early video of the title in action and it looked astonishing – importantly, the players in the game now resemble their real counterparts, a huge step forward in the team's quest to bring as much realism as possible to their products.

'*Total NBA* was our first product and we want every title to get the acclaim it has had'
John Roberts, senior producer, SCEE

So it looks like Sony's gamble – to employ a young, inexperienced team and give them total creative freedom – has paid off incredibly well. *Total NBA* was a triumph and if only half the realism and technical audacity on display in that game finds its way into *Porsche Challenge* and *Rapid Racer*, they should both be exceptional titles. This seems likely – as **John Roberts**, senior producer, points out, 'I'm quite fortunate. We don't have as much pressure as I've had with other publishers to get the games finished and released. We can spend a lot of time and cost to get them right and we won't release them unless they're right because our reputation will suffer. We need to build on it – *Total NBA* was our first product and we want every title to get the acclaim it has had.'

While SCE Japan has enjoyed mixed success with technically astute but flawed titles such as the *Jumping Flash* and *Motor Toon GP* series, the London team's efforts, combined with those of developers such as Psygnosis and Neon, should continue to acknowledge Europe as a major centre for imaginative innovation and technical knowhow. Which can only be good news for the PlayStation and Sony.

Biohazard 2





An empty police HQ... until the zombies arrive

Format:	PlayStation
Publisher:	Capcom
Developer:	In-house
Release:	TBA
Origin:	Japan

No sooner has *Biohazard* (aka *Resident Evil*) become the top-selling PlayStation game in the US, Capcom unveils its inevitable sequel...

Picking up where the original *Biohazard* left off, the action of the sequel is set in Lacoon City, where US medical corporation, Umbrella, is making some dubious experiments on humans. It's 1998 and the arrest of several Umbrella execs has coincided with a series of serial killings. It all results in a plague of zombies, again, this time overrunning the city and police HQ.

The story may be all Dawn of the Dead meets Assault on Precinct 13 but the game follows the same winning format as the first *Biohazard* – *Alone in the Dark* derived 3D 'scenes' and plenty of guns and guts. New features include the ability to change the clothes of your characters opting, for instance, for a police uniform with bullet-proof vest.

Biohazard 2 has more locations, more weapons, more zombies and more gore. With the success of the original how can it fail...



This time, the zombies are mutated police officers. Plenty more gore all round

Rev Limit

The first 'proper' racing game for the N64 comes not from Nintendo but from thirdparty developers, Seta





As expected, the visuals in *Rev Limit* demonstrate the N64's awesome hardware capabilities

Looking somewhat like an N64 *Ridge Racer*, Seta's *Rev Limit* appears to place as much of an emphasis on driving as it does on racing – each car has different weight and tyres, affecting ground friction and handling.

Contact with other cars results in realistic damage rather than some wildly outrageous spin or crash, followed by the return of your car to the track completely unharmed, as is the norm. It looks as if some genuine race tactics will be called for in *Rev Limit*, rather than the abstract gaming skills demanded by typical racers.

The game offers three different modes of play. The sprint race option offers races of between three and ten laps, whilst long distance races run between 20 and 50 laps with pit stops. The third mode gives the player a straight road to drive down to test racing and close-quarters handling up against other cars.





Expect a replay option

Format:	Nintendo 64
Publisher:	Seta
Developer:	In-house
Release:	TBA
Origin:	Japan

Wild Choppers

Nintendo's limited-but-high-quality N64 release policy has, oddly, endorsed two helicopter games. Hopefully this isn't the start of 64bit apathy for the premiere videogame developer...



Format:	Nintendo 64
Publisher:	Seta
Developer:	[illegible]
Release:	TBA
Origin:	Japan

The Nintendo 64's rich palette provides *Wild Choppers* with a more colourful, cartoony landscape to rival the photorealistic textures of *Soviet Strike*

Wild Choppers is the second N64 'copter game, along with Kemco's *Blade 'n' Barrel*. Which is the better game, only time will tell. There are three missions here, each split into three stages and all involving standard whirlybird tomfoolery – destroying radars, rescuing hostages, etc.

Graphically, it's similar to EA's textured *Soviet Strike* (**E**36) with the undulating 3D landscapes peppered with enemy installations, a variety of armoured vehicles and dinky little soldiers. Seta has also imbued the gameplay with a certain level of tactical complexity. Limited munitions and a strict time limit force the player to complete missions efficiently. Rather than a straight shoot 'em up, it seems Seta is going for a slightly more involved game, although from the look of these screenshots it's hardly threatening to be a simulation.





Enemy units attack you in numbers both in the skies (top) and on the battlefield (above)

Softimage-rendered CGI (below, right) adorns *Dark Saviour*'s lavish intro and cut-scenes. The game's director **Shinya Nishigaki** (bottom) looks out of the company's cramped offices high up in a giant skyscraper in hectic Shinjuku (below right)







Climax Entertainment

A tiny development team linked to Sega in Japan and responsible for some landmark software, Climax has built a reputation for quality, not quantity. Edge meets the small time RPG heroes on the verge of hitting it big







Landstalker (top), *Ladystalker* (centre) and the company's 32bit debut, *Dark Saviour*



Climax is one of Japan's unsung development heroes. Occupying an office block near the infamous Shinjuki train station (which frequently loses bewildered tourists in its labyrinthine corridors) the company accommodates approximately 20 staff and, so far, has developed just three games. In 1993 Sega published Climax's seminal Mega Drive action RPG *Landstalker* to a rapturous reception – despite the small market Sega's 16bit machine commanded in Japan. This was Sega's answer to Nintendo's *Zelda* on the Super Famicom and proved to be a Mega Drive title that consumed the lives of Japan's RPG cognoscenti. This was later followed by *Ladystalker*, the curious SNES equivalent designed with female gamers in mind – but, perhaps for those reasons, this failed to live up to the standards set by its predecessor. Now the company has returned to Sega's hardware for its latest and greatest project, *Dark Saviour*.

Kan Naito, president of Climax and director of *Dark Saviour*, previously worked at Enix on the all-conquering *Dragon Quest* series (by far the most successful series of RPGs in Japan) and so understands the nuances of the Japanese RPG market. He admits that his path into the games industry wasn't conventional, having often played truant while at



Dark Saviour includes more than 300 maps, all rendered in realtime. The game also has the benefit of three independent storylines that Climax's director Kan Naito (right) has laboured upon for the past two years









school to the detriment of his education. 'I missed out on so much that I had to buy school books in order to catch up on things like maths and geometry – skills I later found I needed.' This, he concedes, was the hardest aspect of starting to develop for a 3D machine such as the Saturn. Instead of being able to draw upon skills assimilated from a wide portfolio of games, Climax had experience of just two very similar games before work started on *Dark Saviour*, and its 2D heritage meant the Saturn title required starting from scratch.

'To be honest, we weren't at all familiar with the Saturn when we started, and that's been one of the reasons this project has taken so long' adds Naito. 'Both *Landstalker* and *Dragon Quest* were essentially very flat worlds so we had to learn how to handle 3D camera work, etc.' Other problems encountered during the early stages of development were thrown up by the Saturn's specifications, despite Sega's technical support teams assisting them well. When the project began two years ago, the Saturn was perceived by the Japanese development community as the underdog to the PlayStation. In Naito's words, 'compared to the PlayStation, the Saturn is not very good at managing polygons and textures. Initially we had some difficulties to make the game work at a good speed. However, we finally succeeded.'

Despite this, however, Naito is enthusiastic about the Saturn and its reputation for being, when pushed, a far more versatile machine. The team has coded *Dark Saviour* completely in assembler, which it maintains was the only way to keep things moving at speed. 'The PlayStation may be better at managing polygons,' continues Naito, 'but you can't write in assembler, you can only use C and we just don't know if *Dark Saviour* could be done in C. The PlayStation's polygons become easily distorted, too – especially when big polygons come close to the camera. So, in fact, we don't know if the game could be done on Sony's console and what it would look like if we did.' Still, that's little for Naito to lose sleep about since *Dark Saviour* will only be appearing on the Saturn – a valuable advantage for Sega in the next generation software stakes.

But coding in assembler has its problems and, particularly on the Saturn, there will always be the headache of juggling two CPUs. Climax's director concedes that handling 3D graphics with two CPUs is no easy job, despite the results that Sega's internal teams have delivered with *Virtua Fighter 2*, *Sega Rally*, and the hotly tipped revamped version of *Daytona*, soon to be unveiled. 'Even if you have two CPUs it is difficult to use 100% of the hardware specifications because data has to be shared between them and the probability of them interfering with each other becomes higher. One CPU has to wait for the other to finish and it's a

The PlayStation may be better at 3D but you can't write in assembler ... and the polygons easily distort
Kan Naito, director, Climax Entertainment

very complex process,' Naito explains. 'We do not exploit the twin CPUs 100% but we succeeded to use them at a very efficient way.'

The inspiration for *Dark Saviour* naturally comes from *Landstalker*, itself a project derived from what the company's director describes as his own childhood fascination with miniature toys such as plastic models, trains and action men type figures. Naito had experimented with radio-controlled toy figures and had then run tests on his personal computer which gave him a basis from which to start developing games. *Dark Saviour* was the logical progression once 32bit technology arrived. The game's producer, **Shinya Nishigaki**, admits the game has some parts in common with *Landstalker* but the company had wanted it to look more like a movie than its 16bit effort. 'We pioneered the quarter view in *Landstalker* and decided this should become our speciality. As soon as the Saturn was released we decided to use the machine's 3D abilities to include a camera with complete freedom of movement. Our main desire was also to make a style of game that nobody had done before. So, we decided to use a 3D world with a parallel story.'

The implementation of this proved to be a lot more work than the team bargained for. Starting work on the project in December 1994, the game was forecast to be released in May this year, but the team hit problems due to the sheer size of the title. Now far bigger than



In a similar, albeit less diverse, fashion to *SM64*, *Dark Saviour* allows the game camera to be manipulated for the best view of the action

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One of the many locations in the game that requires conversing with other characters (left). The second storyline includes a heroine (above)

previously planned, *Dark Saviour* is due to hit Japanese streets at the end of August (the UK version will be released later in the year). Shinya Nishigaki puts the delays down to the game environments requiring modelling in polygons, while rendering and applying textures to these has taken longer than expected. 'We also spent lots of time making the main camera system. We've called this system "Hyperion Perspective" and our director took no less than six months to make it! After this, we had to make more than 300 maps – all in 3D.'

To help get things up to speed, Climax has relied upon freelance graphic designers, music composers, voice actresses and scenario writers. The team also drafted a famous Japanese TV script writer to pen the scenario for *Dark Saviour*. However, the team has had technical disadvantages when compared to high-powered rivals such as Square Soft and Enix. Currently, Climax doesn't rely on a huge network of Silicon Graphics machines equipped with *SoftImage*. Instead, it uses a less well-known 3D software package called *Cyclone* and its own tools, although it did employ a freelance *SoftImage* artist (**Masayuki Hasegawa**, who designed the stunning intro sequence for Sega's *Clockwork Knight*) to design the intro and cut-scenes. 'This time we didn't have the money to

Climax estimates that to complete the whole game will take in excess of 30 hours

afford such development luxuries, adds Nishigaki. Our next game will be designed using *SoftImage*, though.'

One of *Dark Saviour*'s most interesting features signposts the differences in videogame culture between Japan and the rest of the world. In a similar way to *Landstalker*, Climax has designed its first Saturn game to have three parallel stories. 'People who play a game a second time are numerous in Japan but it's not interesting to play a game twice if the story is the same. So, for *Dark Saviour* we've included a practice story, a main story and the third more action-orientated stage.' The first part of *Dark Saviour* includes either six or seven stages and takes about eight hours to complete. The second story includes ten stages and will be a romantic action story in which a heroine will appear… a little like Romeo and Juliet according to Nishigaki. Even though the third story is shorter with only three or four stages, it is tough and Climax estimates that to complete the whole game will take in excess of 30 hours.

When pressed for future plans the company's director stressed to **Edge** that he doesn't want to continue making just RPGs. 'I have to admit, *Dark Saviour* was a difficult game to make and at the moment all we can think about is getting it completed. I'd really like to do a racing game on the Saturn or PlayStation because I really like cars, and I think we could make some genuine innovations, too.' Hopefully Climax's commitment to this most uncharacteristic Japanese trait will serve them well in the congested 32bit market place.







The team has developed its own custom Saturn tools (top). Beds in the offices accommodate the 24 hourers…

Backtracking

Released in late 1992 in Japan to widespread acclaim (and a year later in Europe), Climax's *Landstalker* was one of the Mega Drive's finest hours. Combining an extensive quest with some unusual isometric graphics, it was an action RPG with a strong storyline and gameplay closer to Nintendo's *Zelda* than previous Mega Drive RPGs such as *Shining Force*.

The company's second game, *Ladystalker*, appeared on the SNES about two years later. It failed to have the same impact, though, mainly because it was more comic in tone and was designed with female players in mind.





Landstalker **(top) was the game that put Climax on the map and helped the ailing Mega Drive in Japan. Pseudo sequel,** ***Ladystalker*** **(above), was released for the Super Nintendo**





Digital Animations

Multiplayer gaming over a PC network is fast becoming *the* medium for designers to create immersive and intelligent game environments. A Scottish company with a background in classified work for the American space programme and the MOD prepares for lift-off







Digital Animations' forthcoming *Steel Legions* will be the latest PC game to take on the likes of *Mechwarrior*. A company traditionally renowned for its professional 3D animations, expect the FMV sequences in *Steel Legions* to be superior to the average crop

In the year 500 BC in the reign of King Ho Lu in ancient China, a general named Sun Tzu Wu wrote a book entitled The Art Of War. *'The supreme excellence is not to win a hundred victories in a hundred battles. The supreme excellence is to subdue the armies of your enemies without even having to fight them,'* he philosophised.

In the 13 short chapters of The Art Of War, Sun Tzu Wu wrote many other wise things, wise things which any future player of *Steel Legions* would be well advised to study. Although Sun Tzu Wu, or indeed *Steel Legions* are not commonly used conversation pieces, the latter has the potential to become famous in the annals of computer gaming history. And if the programmers, graphic artists, marketeers and architects among the staff of Digital Animations get their way, Sun Tzu Wu will become required reading for all players of their games.

Those familiar with Digital Animations will have viewed one of its £50,000-plus 3D-animated corporate videos extolling the virtue of this mega-corporation or that new world-saving widget. Alternatively, the names **Steve Doyle** (electronic engineer), **Jamie Reid** (*Windows* guru) or **Jim Robertson** (AI-neural network guy) would be instantly recognisable. Indeed, you may have worked with them at NEL, the National Engineering Laboratories, one of the British Government's most high-powered centres for the study of supercomputing, parallel processing and artificial life. The sort of place where they routinely produce 3D visualisations of the inside of main battle tanks for the army, space shuttle missions for NASA or the cockpits of the aircraft which will be dogfighting high above the battlefields of World War III. It's the sort of work which sounds tremendously exciting but which, in its actual execution, lacks the true escapism of computer and roleplay gaming. The sort of work which Steve, Jim and Jamie were all gagging to do but which, being controlled by a monolithic bureaucracy which makes the world of George Orwell's 1984 look open and warm-hearted, they were destined never to taste. Until, that is, they met **Catriona Paton**, the Scottish sales and marketing director they now work with.

'Amid the turmoil and tumult of battle, there may be seeming disorder and yet no real disorder at all; amid confusion and chaos, your array may be without head or tail, yet it will be proof against defeat.'



Jim Robertson (left), Digital Animations AI guru, and Steve Dayle (right), responsible for the game's battlefield generation

Catriona not only convinced them they could write the kind of stunning games they'd always wanted to play but had never found on the shelves of their local computer store, but she also envisaged creating the greatest online game yet. And not only the greatest, but one that would ship on time. When it was supposed to. Because on the shelves of Digital Animations' modern business park office deep in suburban Glasgow is a rather unusual piece of software. Next to the large boxes of *Visual C++* and *Doom* is a blue box labelled *Microsoft Project*. And not only has the box been opened, but the pages of the instruction manual are well-thumbed. Most impressive of all, dominating one entire wall of the DA office is a giant *Project* printout of the progress of *Steel Legions* to market. It comes to a conclusive, single black line finale in November 1996. This is not a target date. This is when the game will be on the shelves. Eidos, the company who, along with venture capitalists 3i, is doing all the funding, financial derring-do, bean-counting and box-printing for *Steel Legions*, has proof of this every Monday morning when it gets it weekly – weekly – updates, code samples, graphic highlights and progress reports from Catriona.



The 3D engine in *Steel Legions* looks likely to impress PC owners. Here a quad 'goliath' lumbers in the foreground while a fast recon 'goliath' lurks behind

Continued next page

'When in difficult country, do not encamp. In country where high roads intersect, join hands with your allies. Do not linger in dangerously isolated positions.'

Digital Animations isn't stupid. Being aware that no pre-launch hype can ever save a dismal videogame, the company is taking a different approach. Because the three guys whose baby this is aren't videogames programmers. Yes, they like pizza. Yes, they sometimes wear T-shirts and jeans to work. But what they really like is playing games, games which make you think, games in which the gameplay is as important as the brilliance of the realtime graphics and the prerendered video. They know, for example, that the kind of person who best paints humanoid faces is a classically-trained fine artist. So **Dana**, the guy who's designing the dozens of faces which will appear on the characters in *Steel Legions*, is a classically-trained artist. 'I'd never used a computer until I started working here,' he readily confesses. 'I was absolutely amazed to see that the skin tone of most characters in computer games is completely constant.' While skin tone may figure low on the wish list of the average strategy gamer, when people see how a character's face changes when an explosion is reflected across his helmet visor – then perhaps they will care.







The pilot selection screen, where players can examine the full details of individual pilots (top right). Note the lack of pixellation in the game characters, even close up (above)





Colin McNab (left), and Michael Antliff (right), two of DA's head men. Expect *Steel Legions* to appear on the shelf in November this year, without delay

Digital Animations has been keeping details about the game itself close to its chest. A network battle strategy game along the lines of *Mechwarrior*, *Steel Legions'* strengths could well lie in its unusual use of AI for governing the battle scenarios (see page 63 for more information). **Edge** was shown about eight minutes of the prerendered footage before witnessing some of the game's realtime features. 'Look at this,' says Steve, plumping down at a terminal. 'We're not supposed to be using any of our terminals at the moment – the graphics guys have got them all in rendering mode – but you should see this.' It's a neat program which generates a fresh landscape for each game of *Steel Legions*, so that no matter how many times you play it – even if you always play in the jungle or the city every day for a year – you'll never get the same battlefield twice.

There are just 16 people working to get *Steel Legions* out of the door by November but writing the game exclusively for the *Windows 95* platform saves a lot of hassle. 'We don't have to worry about screen drivers or joystick drivers or whatever – it's a pure 32bit game and Microsoft takes care of all the boring bits for us,' says Jamie, sighing with relief.

Digital Animations is also taking full advantage of *DirectX*, Microsoft's new direct-to-the-metal set of APIs developed specifically for the games market. It is also impressed with the resilience and virtual memory capabilities of *Win95*. 'A month ago we had a bug in the code which leaked about half a megabyte of memory for every frame we rendered, and it's a testament to *Windows 95* that even with over 100 megabytes of memory allocated the game was still running,' Steve grins. 'Slowly, mind you, but still running. You couldn't do that on a PlayStation.'

'When you come to a hill or a bank, occupy the sunny side, with the slope on your right rear. Thus you will at once act for the benefit of your soldiers and utilise the natural advantages of the ground.'

Sun Tzu Wu is Jim's favourite – well, favourite after running marathons and playing chess, that is. He left NEL a year or so ago when they offered him early retirement, and running and chess were all he had in mind to keep him busy for a good few years (and he looks as though he'd be good for another 50 years of so – this man is fit). He knows things about AI that the Government should be uncomfortable to have walking around in the private sector – and deeply ashamed that they let walk out of their research lab doors. It's his genius that means *Steel Legions* could probably pass a basic Turing Test – achieved by inventing a computer that, when you ask it questions, gives responses indistinguishable from those you'd get from a human.

The AI characters will be like real people – they'll react differently to different inputs, they can have good days and bad days, they'll love or loathe their commander and subordinates. If you give them good orders they'll respect you. If you give







***Steel Legions* comes complete with the now traditional dosage of full motion video. A pilot speeds across a gantry to mount his goliath spaceship (left). The dropship prepares for a bumpy landing (centre). A shot of the exterior of the base, which is under attack in this sequence (right)**

them bad orders, they'll try to frag you. That sort of thing. They'll talk about you behind your back.

'One of the highlights for me is that the AIs in our games aren't designed to work at their very maximum capability all the time,' says Jim. 'Rather, they're designed to emulate as closely as possible the characters they represent. We've had a number of arguments in the development – you can have a situation where the AI can work flat out, but its main mode is to represent ordinary humans as accurately as possible.'

Behind their AI characters is neural net technology to cope with the huge inputs of which the game is capable. Neural networks, once they've finished their learning stage, are inherently quick and use much less of the processor time than other processes. 'One of the first tasks I had was to delve quite deeply into military tactics and strategy, looking at the great military leaders of the past,' says Jim, 'as far back as Sun Tzu Wu – that guy was fantastic, the things he was saying 2,500 years ago are still applicable today.' They programmed Wu's rules – and those of great generals like Napoleon – into their neural net and discovered that it could come up with tactics and strategies for situations they'd never directly programmed into it.

Steel Legions can be played at many different levels, depending on how you feel. You can be the general at the top, taking a strategic view of the battlefield and watching the big picture. You can be a grunt hunkered down in a corner of a ruined semi-detached house, wondering where your next tin of cold C-rations are coming from. Or you can be anyone in between.

With the Internet's bandwidth being too narrow to accommodate a fast-paced game, for now Digital Animations concedes that local network play will be the only feasible environment for *Steel Legions*, although it hopes to have the game running on BT's *Wireplay* service and possibly even Dwango. Then you'll never know, nor need to know who you're playing against.

'In *Steel Legions* the human player is a guest,' adds Jim. 'It's basically a game of AIs and you come in and replace one of the AIs, so it's always fully-populated.' DA are already planning interlocking games which will play in the *Steel Legions* universe and, for example, allow for greater gameplay diversity. 'We've spent a lot of time on the background, the physics and politics of our universe which, although we may not be able to exploit them in this game, they will appear in future games,' says Steve. 'We call it SPICE, the SPace Integrated Combat Environment.' But that's another story...

'It is the business of a general to be quiet and thus ensure secrecy; upright and just, and thus maintain order... He must be able to mystify his officers and men by false reports and appearances, and thus keep them in total ignorance.'



Digital Animations' operations director Colin McNab; sales and marketing director Catriona Paton; and creative director Michael Antliff. The company is also heavily into artificial life (see page 58)







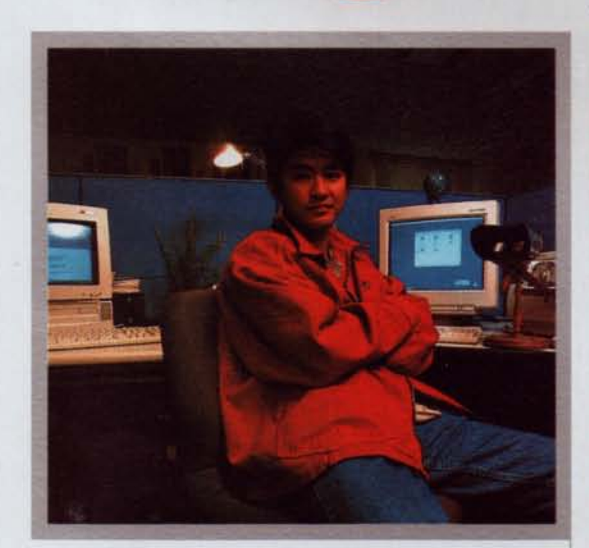
The atmosphere within Sega's annexed coin-op design department is very relaxed, with the emphasis on creativity and innovation. First project, *Sega Touring Car Championship* (left)

Primarily we want to produce very powerful games, using strong colours and graphics that are very realistic. Also, it's very important that we work on games that we really want to do – we don't want to only make competitive games, we want to make captivating games based on new concepts, games that are really challenging.

These are the words of **Tetsuya Mizuguchi**, the Sega producer who's broken away from the strict confines of the company's AM divisions and hand-picked a team that he hopes will be able to replicate the success of *Sega Rally*, the smash hit whose development he oversaw while working as a producer within AM3.

'We wanted good working conditions and our new department is small,' he explains. 'From a creativity point of view, big teams have advantages and disadvantages. We certainly don't believe that it's bad to be separated from AM3. Before creating the department, I explained the concept to AM3's manager and then to **Higashi**

Sega AM Annex



Tetsuya Mizuguchi's ambition is to produce games with unrivalled realism for both coin-op and console markets

Suzuki, the head of amusement machine development at Sega. Together we all agreed that creating a new department, separate from AM3, would be a good thing.

'Initially, we started with only six or seven people – *Sega Rally*'s programmer and some designers. Then we took on board more staff. We're currently only working on *Sega Touring Car Championship*, but we're aiming at making about two-and-a-half games a year. This year we might even begin work on *Sega Rally 2*... but the game is only running in our heads at the moment! We are now really impatient to start working on Model 3.'

We are now really impatient to start working on Model 3

Sega Touring Car Championship is the logical progression from *Rally*. Presently only 60% complete, the finished game will simulate the touring car racing scene that's enjoyed a surge in popularity in Europe in recent years.

'It's essentially a competition game playable with linked cabinets,' explains **Kenji Sasaki**, the director of the project. 'Beginners will be able to play it and take advantage of the gradually increasing difficulty level. As in *Out Run* you'll have to reach a goal in order to get to the next level.





These early visuals from *Sega Touring Car Championship* give an indication of the quality of graphics that AM Annex is striving for. Sega's Model 2b board delivers the visuals although the team are anxious to get to grips with its formidable big brother, Model 3. *Sega Rally 2*, perhaps?





But advanced players will also be able to enjoy its time-attack mode.'

The team behind the game has pedigree, though not all of the Annex group has worked on racing titles before. 'Only a few of the staff that worked on *Sega Rally* are working within what's now known as AM Annex' says Mizuguchi. 'We brought in some members from outside, and some have been transferred from other departments within Sega. We've now got about 15 people in Sega Annex – as I said, we didn't want to have a big team. Our chief goal was to get respected creators working together.'

Touring Car's programmers are striving to make it an even more exciting experience than its previous efforts. 'In *Sega Rally* the player was principally driving alone – it was kind of like the player performing in a competition against himself,' adds Mizuguchi. 'This time there'll be many cars appearing during a race: cars will bump into each other and generally get in each others' way. The competitive aspect will be really improved.'

The rough-and-tumble angle is one that graphic designer **Kumiko Shioji** is especially keen to bring to the fore: 'We want the player to be impressed by the game at the first moment they look at it. When cars bump into each other we're aiming to get very impressive effects. We really want to avoid having cheap-looking graphics.'

'We want the player to be impressed by the game at the first moment he looks at it. When cars bump into each other we're aiming to get very impressive effects'
Kumiko Shioji, graphic designer, Sega AM Annex

Sega is respected for researching its driving games meticulously, and this attention to detail is in no small part responsible for the success of games such as *Daytona USA* and, more recently, *Manx TT*, whose development saw its designers visiting the Isle of Man to get firsthand experience of the sport. AM Annex has approached the *Touring Car* project in a similar vein. 'We thought that a competition covering cars from all over the world would be interesting,' says Mizuguchi. 'We had the opportunity to see touring cars running up close, some of us had the chance to drive real racing cars, and we also met some pro drivers. After this, everyone here was excited by the prospect of making a game based around touring cars.'

Kumiko Shioji has designed the game's cars and backgrounds, having visited numerous locations around the world to acquire the flavour of real tournaments. 'I went to Finland and I took some photographs in order to recreate backgrounds in the game. I look at real life backgrounds with my own eyes and try to recreate the same atmosphere on the computer screen. As you'd expect, the main problem I have is trying to keep everything as close to reality as possible.'

The team has only been working on the game since April but plans to have it finished by September in time for its debut at the JAMMA show. By that time it will have four cars to choose from



Graphic artist Kumiko Shioji (top) visited Finland to research data for *STCC*. Mizuguchi-san (above) also travels extensively to gather data

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– an AMG Mercedes, an Opel Calibra V6, an Alfa Romeo 155 V6 TI and a Toyota Supra GT, all of which have been designed with cooperation from their manufacturers, and thrown around on screen using Sega's well-established Model 2b technology.

Miziguchi's *Rally* was lauded not only for its visuals but also its feel, a factor that made it the coin-op with the closest-to-reality feel ever seen in the arcade. Naturally, Mizuguchi is aiming for similarly impressive results in *Touring Car*. 'We wanted to make a game with lots of "gravity". The weight of graphics could be the keyword in describing the game – we've been saying that a lot recently. We wanted to make a game graphically very "heavy". Sound-wise we're aiming for really impressive effects and music. We've sampled the engines of real cars and we'll be putting speakers in the seat to give a realistic feel. We've also included techno music.'

Mizuguchi's fondness of the dance music scene is manifesting in a way that mirrors what has been happening in the Western videogames industry, which has seen collaborations between the likes of Psygnosis and techno bands such as Orbital and Leftfield. 'Some of the music has been done by dance artists, and we've also got some work from AVEX-TRAX [a leading Japanese record label specialising in techno],' confirms Mizuguchi. 'The concept



'Sound-wise we're aiming for really impressive effects and music. We've sampled the engines of real cars and we'll be putting speakers in the car seat'

Tetsuya Mizuguchi, producer, Sega AM Annex

was to make BGM (background music) which fitted with the acceleration you feel in the game, so we decided to use techno music. We've used musicians from Japan, of course, but we're also using an artist from Belgium and one from Italy. We're writing a specific theme song for the game and, as we did for *Sega Rally Championship*, we're going to be putting out a race remix CD.'

Sega Touring Car Championship is likely to mark Sega Annex's first and last dalliance with Model 2 hardware. The team plans next to work with its esteemed Model 3 board and whenever it's name is mentioned Mizuguchi's eyes sparkle and a broad grin extends across his face with anticipation. Sasaki-san is equally optimistic about the possibilities afforded by Sega's newest technology: 'Until now we haven't been able to make stages using rain or snow. Also we couldn't really do night stages – I don't mean completely dark stages, but stages with medium lighting and nice lighting effects. With a Model 3 board we'd be able to do these sorts of things. We've tried to make snow stages [with Model 2] but we gave up because the general look was too crude'. We'd be able to express ourselves more efficiently with Model 3.'



'When a designer is working within the confines of Model 2 the work is very difficult,' claims Mizuguchi. 'Because the texturing is monochrome, designers have to gather different colours on polygons to get a good effect. This work is very fastidious and time consuming – with Model 3, and in the future, Model 4, the designer will be free to concentrate on other work.'

Despite his track record, Mizuguchi isn't in love with the idea of producing more racing games for the sake of it. 'My prime concern is making games that are lively – I want to work on at least one per year and gradually improve their quality,' he says. 'But I also want to explore new concepts – our new department has some very strong skills. Personally, I want to make new games that are based on dreams. I'm not saying rally games aren't my dreams, I simply would like to make games related to fantasy – I want to create new worlds. I would also like to try, at least once, developing a console game.'

Naturally, AM Annex's creative vision will continue to be at the mercy of market trends and what games are generating the highest revenues. However, with some ambitious plans for videogames and the world's most powerful realtime hardware soon to be at the disposal of his team, expect some exciting and dynamic games to surface in the near future. ∎









As in *Sega Rally*, *STCC* gives the player a choice of different cars. Director Kenji Sasaki (far right)

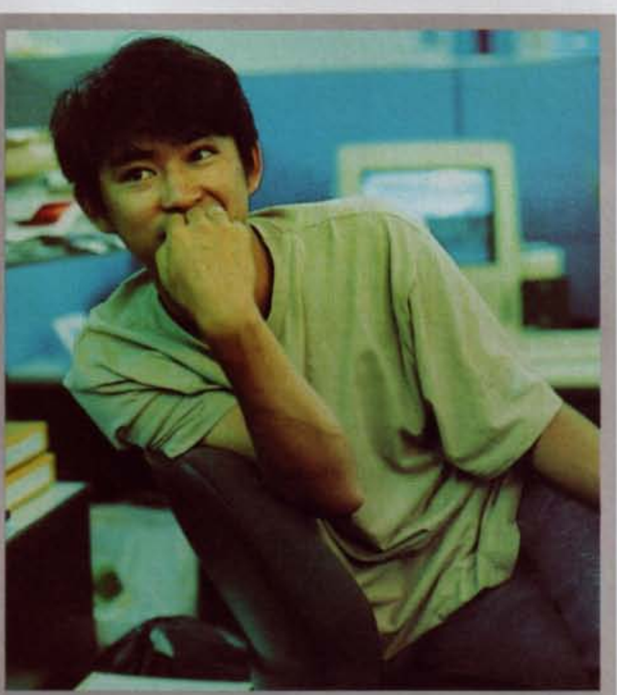












Kumiko Shioji (top) works on the track designs for the game trying to attain a high level of realism while Mizuguchi-san oversees the project





With its now customary 60fps update and hi-res display, *Sega Touring Car Championship* looks destined to become another racing classic in Tetsuya Mizuguchi's stable that includes *Sega Rally Championship*, and more recently, the excellent *Manx TT*. Expect it to appear in the Autumn

Artificial life

Computers that learn from their mistakes? Digital creatures that reproduce? Edge finds life, but not as we know it...

After alien attack, surely the next most popular theme in science fiction is the computer which develops the ability to think. Playing on understandable human fears of inanimate objects with mysterious abilities, this usually leads to an apocalyptic finale of some sort. Yet this fear does not seem to be rooted in fact: despite the stunning exponential increase in computing power which has taken place over the last ten years or so, computers have quite evidently not managed to acquire thought processes of their own.

Artificial Intelligence, though not without its uses, has proved to be anything but intelligent. Recognising this, scientists armed with greater computing power than ever before have embarked on a new path, reasoning that, as organic life forms are the only objects in the human experience which display any form of intelligence, it may be possible to endow inanimate objects with some modicum of intelligence by modelling them on those very organic life forms. Thus, artificial life was born.

Although we are still a long way away from having computer based entities which can really *think* like humans, early indications are extremely promising. On paper, artificial life engines could power all



Illustration by Nicola Hartley

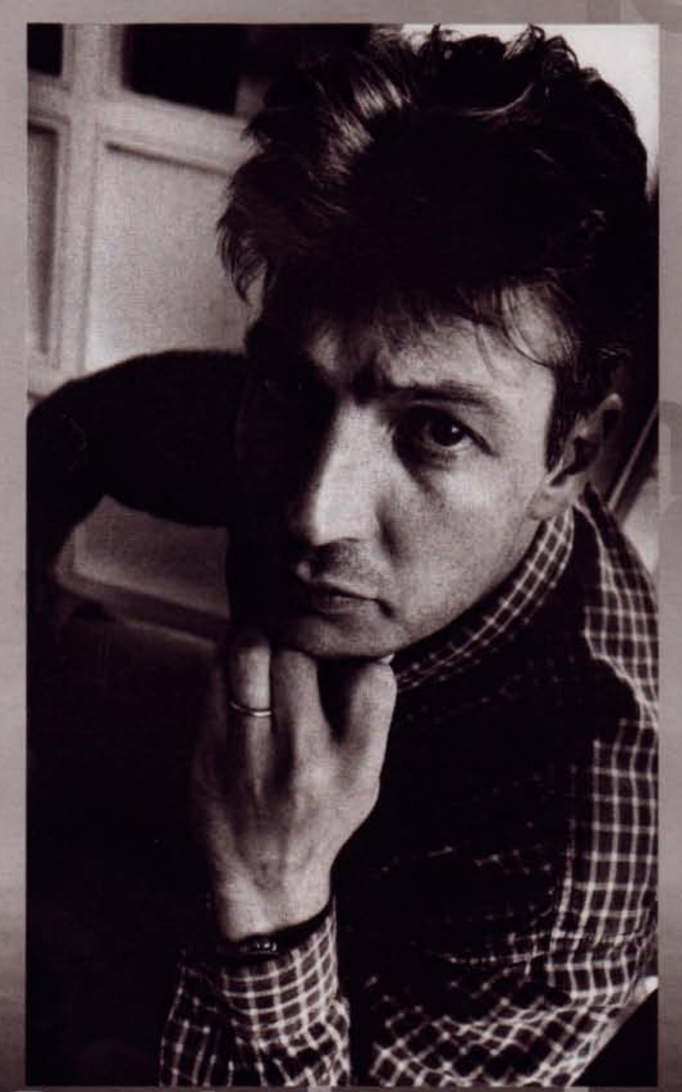
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copying biology

manner of everyday objects, such as, say, super-efficient traffic control systems, intelligent Web browsers or intelligent telephone routing systems. Artificial life, despite having only reached the infancy stage of its life-cycle, has without doubt become one of the most closely scrutinised new technologies in existence. And, fascinatingly, the pioneering Dr Frankensteins attempting to jolt this exciting new technology into digital consciousness are neither massive global corporations nor shady government research establishments but, instead, games developers – with a lot of help from the academic fraternity.

At the forefront is Cambridge-based Millennium Interactive, whose soon-to-be-released *Creatures* game for the PC will be the first readily available, tangible manifestation of artificial life. Following closely is **William Latham**'s Computer Artworks, busily engaged on turning its genetically modelled Mutator engine into the basis of a computer game. Tiny Scottish developer Digital Animations is turning the expertise learned by many of its staff at a now-privatised space/weapons research laboratory into a new super-Artificial Intelligence engine which will be used as the basis of a genre-busting game, *Steel Legions* (see box-out, p63 and feature, p46). The games world, previously home to all that is frivolous and justified by nothing more sophisticated than pure, unadulterated entertainment value, has, through artificial life, made an evolutionary jump into a scientific test-bed.

> The games world, previously home to all that is frivolous, has, through AL, made an evolutionary jump into a scientific test-bed



Millennium Interactive's Michael Haywood predicts the company's CyberLife technology will find uses in Internet search engines, database analysis, traffic control systems and even pizza cooking

This scenario is not as unlikely as it may sound. The seeds of artificial life were sown when programmers realised that they could induce surprisingly organic-like behaviour in computers, the prime example being a program called *Life*, developed in the 1970s by an academic researcher called **John Conway**. *Life* chops the computer screen into a grid and applies very simple rules to dots or cells on the screen – certain arrangements of cells breed new cells, and certain other arrangements cause existing cells to die. Although very simple, populating the initial screen with certain patterns can eventually breed a state of equilibrium in which the resulting cell population seems to be self-sustaining, and the resulting pattern often mimics one of the recurring patterns seen in natural life.

Millennium's interest in artificial life grew from a similar project, involving connecting a neural network developed for another project up to a grid of flashing lights, rather than a computer screen, undertaken by *Creatures* chief architect **Steve Grand**. The company took an overall interest in the technology but before sinking money into it had to be sure



The cute animals in *Creatures* learn from experimenting with their environment and then pass on those 'genes' to generations of offspring

of some sort of financial return, so it took the obvious step, as a games developer, of turning the technology into a computer game. If *Creatures* hits, this will pay off. According to Millennium's **Michael Hayward**, 'The next stage is to develop partnerships, which would enable us to exploit the underlying technology of *Creatures* before anyone else does.' But so much attention has surrounded the game, and indeed, the game itself (in the final stages of debugging as **Edge** went to press) is looking so compelling that it may be some time before Millennium is able to explore the possibilities of its artificial life engine.

But, on paper, these possibilities are astounding. By digitally modelling organic life processes, such as a genome set (which, like all sets of genes, can handle a level of mutation) which governs digitally modelled versions of the chemical reactions which take place in the bodies of living organisms, and a brain whose synapses connect according to external stimuli much as in a living organism, Millennium believes it has created a system which, in Michael Hayward's words, 'is like a heterogeneous neural network that modifies itself, without anyone having to say yes or no to it.' In other words, it's a self-teaching neural network. Millennium is hoping that, when applied to its digital Norns (the life-forms from *Creatures*), it will enable them to develop organic instincts for survival and self-propagation. And this looks to be an attainable aim. Millennium's **Toby Simpson** is rather excited about behaviour exhibited by one Norn during the final fine-tuning exercise devised by Millennium, aimed at breeding Norns with interesting behavioural patterns: 'One of the Norns worked out all by itself that if it picked up eggs and threw them in the incubator, out would pop a friend. So it spent a lot of time scouring its habitat for eggs. This was unbeknown to my colleague on whose computer this was taking place. He went to lunch and got back to find a room full of Norns squabbling with each other, and he couldn't work out where they came from until the first Norn brought another egg into the room.'

This mirrors a major artificial life experiment conducted by **Tom Ray**, a US-based research scientist. Called *Tierra*, the experiment's purpose is to determine whether sustainable digital life can be created on the Internet. Ray has taken what is essentially the code governing computer viruses and

Millennium has created a system which is like a heterogeneous neural net that modifies itself. In other words, it's a self-teaching neural net

doctored it to remove all traces of the unpleasant effects normally associated with such programs. He is concerned with studying how these digital organisms cope with different computing environments (can they exist on the choppy waters of Internet servers as well as calm lagoons like home PCs?) and whether they can develop the ability to form colonies and so on. The organisms themselves are nowhere near as sophisticated as *Creature*'s Norns, but are a huge evolutionary rung up from the simple dots in *Life*. They are not designed to be able to do anything as complex as think, or even make decisions. Rather, they are designed to achieve an instinctive level of survival. At this point, things become a tad scary. If they do survive, will they be able to evolve to a more sentient level? Ray has built in plenty of self-destruct mechanisms, and intends to keep the experiment's conditions as much like a laboratory as possible.

Creatures' emphasis is very different. The Norns will, of course, be confined solely to the environment of the game, which is rather a cosy one: they have objects like teleport machines, submarines with viewing ports, desert islands, bee's nests containing honey, jack-in-the-boxes, rubber balls and so on at their disposal, and the interest lies not in seeing

copying biology

whether they can merely survive but in seeing how they can develop by learning from visual and tactile stimuli (coming from both objects found and humans playing the game), how groups of Norns can learn to interact with each other and, most important of all, how that interaction alters down generations of Norns. Not even Millennium knows what is going to happen in any of these respects, so everyone who becomes an early *Creatures* adopter will be engaging in a fascinating experiment in digital genetics. There is a danger, of course, that Millennium might not have got its routines quite right, so this experiment may prove a huge flop. At least Norns only have a life-span of roughly 40 hours, so it will take much less time for *Creatures* adherents to see the effects of evolution than it does in the natural world.

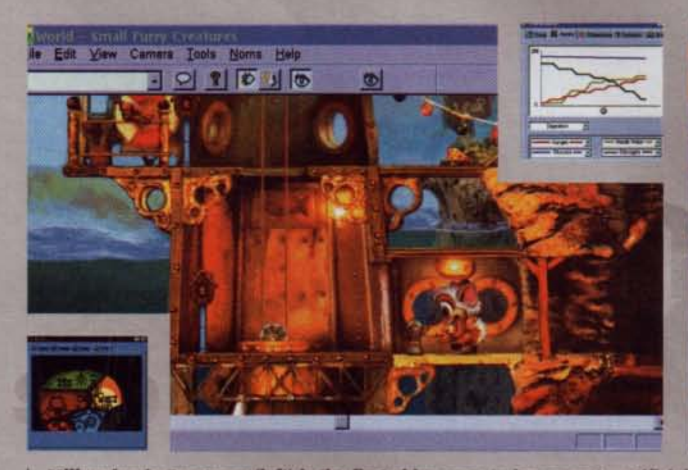
But if, as in the egg-hatching example given above, Norns can learn to, effectively, learn, and then pass what they have learned to future generations, thereby becoming more intelligent as time passes, then Millennium will find that it has a potent technological engine, which could possibly be employed in a number of real-life situations. In practice, the generational aspect of passing information to offspring will be nigh-on impossible to apply to the sort of everyday objects into which Millennium wants to embed its artificial life engine, although one could see it being applied to human social problems (budding researchers take note: even Millennium itself does not appear to have seen this possibility). But Millennium fully intends to pull out the brain simulation – which,

If the creatures can learn to, effectively, learn, Millennium will have a potent technological engine

remember, is supposedly able to teach itself to take decisions – that exists within *Creatures* and embed it in some surprising places.

The company's Michael Hayward is brimming with examples: 'What it will be good at is building a knowledge base with no preconceptions. For example, it could be used in Internet search engines, where it could learn the sort of things you like and go and find them. Or, it could cope with 3D database analysis, in which a company like Barclaycard could use it to monitor buying patterns and look for weird stuff. Likewise, it could be used to make stock market predictions. Because it has no preconceptions, it won't know anything at the start. But it could monitor the stock market over a period of time and on the basis of that predict future trends. Or it could be used on massive phone networks to predict call surges.'

These are all areas in which neural networks have been used to offer oracular predictions, with mixed success, so it would appear that in the same way, artificial life has much proving to do. Although Hayward is correct when he points out that neural networks do have preconceptions. This is because they are linear: one set of inputs fed into a neural net will always produce the same output. This is emphatically not the case with





Millennium's *Creatures* (left) is the first videogame to incorporate artificial life technology, meaning gameplay developments cannot be predicted. Digital Animations *Steel Legions* (right) uses complex artificial intelligence routines to individualise the game's soldiers. **See page 46 for more**

Digital Animations

Many members of the staff of Scottish developer Digital Animations are literally rocket scientists – in a previous life they worked at the National Engineering Laboratory in nearby East Kilbride, a government-owned research establishment specialising in weapons and space technology, whose clients include NASA and the Ministry of Defence. Sadly, the Tory government's 'If it moves, flog it off cheap' attitude came to rest its gaze on the NEL, and the establishment was sold to German electronics giant Siemens. The disaffected NEL workforce was 'downsized' from 4,000 to just 200 people, but a small group dreamed up an innovative way of putting their skills – which included artificial intelligence work for missile guidance systems – to good use, and Digital Animations was born.

The first fruits of their labours will be a battle strategy game called *Steel Legions*, to be published by Eidos in time for the coming Christmas rush. Battle strategy games are two-a-penny, of course, but thanks to Digital Animations' background, *Steel Legions* stands out for one specific reason. An intimate understanding of artificial intelligence, allied to a liberal dose of lateral thinking, has given *Steel Legions* attributes possessed by no other game on the market.

The company's chief AI boffin, Jim Robertson, explains: 'Existing games that use AI tend to be poor. There are a number of reasons for this. First, most of the development effort goes into the graphics and gameplay, and AI is an afterthought. Second, AI is inherently a difficult field to grasp. Third, the approach taken is fundamentally wrong.'

Robertson has ten years of AI research at the NEL behind him, and this, he claims, has allowed him to 'Produce an AI philosophy here at Digital Animations which is fundamentally correct. Take chess games. These are designed as monolithic single entities, which is how most in-game AI engines work. In other words, they have a set of rules and probabilities governing outcomes, and if you haven't programmed a rule for a probability, they won't recognise that outcome as a probability, so you get blind spots.

'What we've done is take a modular approach using AI agents, which are single AI objects that can think for themselves; these combine to give the game's AI. In *Steel Legions*, you have two sides in a battle, and each side has men and machines split up as battalions and so on in the correct military style. In the game, each one of these positions is occupied by an AI agent. Although there's one game AI engine, it runs individually, with different characteristics fed into it, for each character, so each acts differently. In a *Steel Legions* battle, the outcome depends on the AI of each agent and the communications between those agents, namely orders from their superiors.





'So where do the gameplayers come in? They enter the battle as a guest. For example, if you choose to take over the character of the commander, that AI character will go out of the game and you will take its place, and where the AI engine was making decisions, you will now make the decisions.'

This innovative approach breeds a number of scenarios which are way beyond the remit of existing battle strategy games. For a start, it means that multiplayer games of *Steel Legions* are physically the same game as singleplayer games, and that a *Steel Legions* game can start as a singleplayer game, then become a multiplayer game and end up again as a singleplayer game. If a particular phase of a *Steel Legions* game was dragging on a bit, you could take a time-out, put an AI character back in your place, and re-enter the fray at a later stage. Or you could start off, say, commanding a battalion, then take over the character of one of the troops on the ground, just to get a feel for the action.

Robertson claims that, 'The AI characters can be tailored to act like you.' This is simply achieved, by monitoring your inputs as the game progresses. Thus, you can mould an entire Steel Legion in your own image – as long as you have the patience to spend a period playing as each character. Unlike artificial life systems, Robertson concedes that the 'Central AI system does not learn as it conducts a campaign in *Steel Legions*. But at the end of any game, we use the profile generated to upgrade the characters, so those characters benefit from having greater experience.' Artificial intelligence, it seems, still has its uses, when applied in an intelligent manner. Perhaps next year, battle strategy enthusiasts will testify to this – presuming Digital Animations gets all the factors that go into creating a top-notch strategy game up to the standard set by *Steel Legions*' underlying technology.



William Latham's company, Computer Artworks, uses artificial life routines in its *Mutator Engine* (top right). Genetic modelling algorithms are incorporated in the *Engine* code to provide the 3D models with organic characteristics. The company's attempts at breeding artificial lifeforms are extremely interesting to observe (breeding mutation, above) and resemble the organic artwork of Alien designer, HR Giger. Its *Organic Art* screensaver mutates and 'breeds' in realtime (far right)

artificial life systems, which have an in-built element of unpredictability, which comes from the genetic engine.

Hayward gives more examples of how this unpredictability – which, paradoxically, gives the system (at least in theory) some form of learning ability – can be harnessed: 'Take formula one cars. Companies can't afford to do much testing because it costs so much to hire circuits and drivers, and buy fuel and so on, plus there are massive time constraints. You might want to know what effect moving the engine forward by a few millimetres has on the car's handling. Teams have traditional computer models which attempt to determine this, but the drivers often report the opposite result to what was predicted when they actually get in the car.' Hayward contends that artificial life engines could provide a virtual driver's-eye view of making such changes, and even approached Benetton, which found the concept a bit too avant-garde. A potentially more viable application would be in systems of traffic lights, where each traffic light on a road could talk to its immediate neighbours and, with the help of rudimentary, automatically generated traffic flow data, learn how to keep traffic flowing as quickly as possible.

Other applications of AL include televisions which learn what sort of programmes you watch, and intelligent microwaves which automatically cook, say, a pizza for the right length of time. One wonders whether, as computers acquire the ability (thanks to genetic modelling) to indulge in some form of thought the human race will have become so lazy that evolution dictates that certain parts of its bodies are no longer required.

Although theoretically possible, it looks as though it will be some time before artificial life technology makes an impact on everyday life in such

Other applications of AL include TVs which learn what sort of shows you watch and microwaves which cook a pizza for the right time

ways. In the meantime, you will have to make do with AL computer games and Net-based AL experiments. But already Millennium is not working in a vacuum. William Latham's marrying of computer technology and genetics has been extensively covered in previous issues of **Edge** and according to Latham his Computer Artworks. 'Can now be thought of as a games developer,' rather than just a producer of pretty digital art. Latham and his colleagues are currently grappling with the intricacies of creating a full-blown AL videogame, based on Computer Artworks' *Mutator Engine*, which uses genetic modelling not to create semi-sentient digital organisms but to create new shapes and forms with an oddly organic look to them.

Creatures' arrival means gamers will be able to experience the symbiosis between technology and genetics before anyone else

Like the AL engine behind *Creatures*, Computer Artworks' *Mutator Engine* can be used for financial analysis but Latham, who is essentially an artist, is more concerned with using it for exercises such as predicting the shape of the house of the future, so it is likely that any game based on the *Mutator Engine* will be angled more towards creating strange, futuristic worlds rather than creatures which socially interact. At the time of writing, Computer Artworks has embarked on a pilot scheme for the game, which was originally due to be completed late this year. It now looks as though this pilot scheme will be ready for delivery next March, by which time Latham hopes that the interest shown by games publishers such as BMG has not waned. At least *Creatures'* imminent arrival means that games enthusiasts will be able to experience the new-found symbiosis between computer technology and genetics before anyone else. But who can predict how artificial life – which exists as nothing more tangible than a stream of notional 1s and 0s, yet behaves in an organic manner – will affect our lives in the future?

Social engineering

One of the most startling aspects of Millennium's *Creatures* is its potential as an experiment in digital social engineering. This is something which Millennium hopes to monitor carefully, with the help of its Web site.

To understand what is meant by digital social engineering, imagine the organic analogue: an entire new species, perhaps as the result of a major genetic mutation, springs into existence. How will this new species evolve? How will it cope with differing environmental conditions? How will different races of the species, if you like, evolving in isolation in different parts of the world, progress? And what will happen when these races cross-breed? The structure of *Creatures*, at least on paper, should allow us to observe these phenomena as they take place in the digital world.

Each *Creatures* owner will take delivery of a set of eggs, on disk, which have different genetic characteristics to all other copies of *Creatures* – or so Millennium assures Edge. Millennium has built into *Creatures* the ability to manipulate your Norns' genomes, so expert *Creatures'* users will be able to perform genetic experiments designed to breed a certain type of Norn. Millennium is hoping that, as copies of *Creatures* find their way around the globe, people in different countries will interact with their Norns in different ways, and manipulate their genomes in different ways, thus breeding different races of Norns with different behavioural patterns and social characteristics.



Norn eggs can be distributed freely – having bred ten generations of Norns, for example, you could take one of the latest batches of eggs, put it on a disk and hand it to a friend, or even post it on the Internet. This raises all sorts of possibilities, which are rather reminiscent of dog breeding. For example, warrior Norns could be bred, or clown Norns. Even Millennium does not know to what extent this will take place, but let us hope that the basic code it has written is sophisticated enough to allow Norns to develop emphatically through the generations. Digital life, it seems, has the potential to tell us much about ourselves. Even, perhaps, about unconscious racial characteristics which are best kept hidden.

copying biology

A meeting point for media capitalising on the digital entertainment revolution

nuMedia

in **association** with 

Multimedia CD-ROMS are often looked down upon by the gaming press as nothing but limited edutainment. This month's batch, including an interactive mixing desk and a chance to be in *Monty Python's Holy Grail*, provides evidence to the contrary. Also, with news of *Wipeout 2097*'s plentiful music content, the audio CD section becomes more relevant than ever – music is becoming a distinguished part of games and any of the tracks covered this month may find their way into future releases. Also coming under the nuMedia spotlight in this issue is the Sharp ViewCam and the Hewlett Packard palmtop computer: a gadget which will, if not improve your life, then certainly make it more interesting for people sitting next to you on the train...

Music



Alex Reece
So Far

4th & Broadway

Smooth jazz 'n' jungle operator Reece first came to prominence with the lush vocal stylings of 'Feel The Sunshine' and cool restraint of 'Pulp Fiction', but 'So Far' shows his understanding of dance to stretch much further than the radio-friendly sound explored on these singles. This is a wise move, for Reece's clean-cut take on drum 'n' bass leans toward the sanitised and bland on a couple of tracks. Far meatier are the dissonent, techno-edged experiments – where 'So Far' almost becomes a counterpart from Orbital's 'In Sides' opus. An uneven debut but Reece's hooks prove surprisingly compelling.



Distance to Goa 4
Various

Sony

This solid compilation starts well, with a Goa-style reworking of Marmion's old German trance classic 'Schoneberg', and continues in a vein which will please Goa trance fans, involving bucketloads of whooshy and squelchy effects, dodgy tunes and thumping kickdrums, etc. But the unconverted will find it quite samey, with the possible exception of Technossomy's excellent effort. If you avoid the seductively lurid packaging of the limited fluoro edition you'll find a bonus disc much more inventive and varied than the main disc with Goa trance classics such as Phreaky's 'Tornado' and Hallucinogen's 'Space Pussy'.

CD-ROM

Essential Mix 3

- London Records
- PC CD-ROM
- £19.99

Handbaggy house compilations seem to have sprouted like triffids all over high street record shops and pub jukeboxes. In **Edge**'s opinion, this is more than ample justification for ignoring their very existence. But London Records has gone to great lengths to ensure that its *Essential Mix 3* compilation stands out from the faceless crowd. Although normally on two CDs, a limited amount will be sold with a bonus CD-ROM. In a similar manner to *Sounds of the City: Manchester*, this CD-ROM has a stab at creating a virtual DJ's booth. Thankfully, its execution is way ahead of that of *SOTC: Manchester*.

For a start, the *Essential Mix 3* CD-ROM has no gratuitous low-quality video clips. It just has one screen – a nice, clean representation of two decks seen from above, with a mixer between and a record box above. It's pretty easy to use – just flip through the record box with the mouse, select two tunes and slap one on each deck. At this point, you find that the decks still don't work like digitised versions of Technics decks. But at least you can cue them up to a certain extent, as the turntables are split into pie-shaped segments, representing different sections of each track. Because synching is done automatically by the software, you can just about mix – and you can also record your efforts to the hard disk.

The only problem is that the tunes in the record box come from Pete Tong's selection, so, with the exception of Underworld's 'Born Slippy' (which got into the charts a year after release thanks to Tong's obsessive caning of it), only cheesemongers will find anything that they'd actually mix themselves. The audio CDs also whiff slightly, with David Seaman and Judge Jules in their most determinedly commercial modes (Jules, in particular, can do much better). Luckily Chicago house king Derrick Carter steps in to save the day, with a slowish set which mates improbably kitsch vocals with intricately mixed ambience to create a bastard son which is weird, trippy and often even amusing. Carter is well worth watching – along with the likes of BT, he is bringing an intelligence to bear on house music which could bring it much-needed credibility.





Essential Mix 3 is the first of this month's 'do it yourself' DJ CD-ROMS. Here, the screen display of two turntables is simple, but the selection of available tracks to mix is unfortunately cheesy, to say the least



Mrs Wood & Blu Peter
Bitter & Twisted

React

Whereas house collections often fall foul of excessive handbaggery, the scourge of the techno mix set is lack of pace. It's just such an absence of any real highs or lows in energy levels that turns much of the first half of 'Bitter & Twisted' into an exercise in hard-nosed repetition rather than impassioned trance. The second CD, one the comically named Blu Peter presumably made earlier, is far more satisfying. Unafraid to edge toward mass dancefloor appeal than dive into spectacular acid squiggling, efforts from Mark NRG, LSG and Kool World display a colourfulness and sense of fun that much of the first CD lacks.



Ferox
Adventures in Techno Soul

React

This compilation takes Ferox out of the underground, and is good enough to propel it into the limelight. The sound is a distinctive cross between funky techno and deep house, and the prime examples are Too Funk's 'Venus Fly Trap' - with deep house messiah Derrick Carter on knob-twiddling duties. 'Precession's Sandcastle': deep house at its most minimal and textured; Synchrojack's shimmering 'End of the Road', and two tropical techno tracks from Russ Gabriel himself, the second of which benefits from a remix by what some would regard as the hand of God - aka techno pioneer Carl Craig.



Metalheadz presents Platinum Breakz
Various

Metalheadz

Goldie's Metalheadz label is responsible for inventing drum & bass as we know it. No surprise, then, that the artists on this long-awaited double-CD read like a drum & bass Who's Who. Peshay's 'Psychosis', J Majik's 'Your Sound', Photek's 'Consciousness' and Alex Reece's 'Pulp Fiction' are all tracks which have achieved legendary status. The first disc kicks off with 'VIP Riders Ghost' from Goldie's Rufige Cru project, while the second starts with a frightening concoction of keyboards and shrapnel beats and carries on in a more experimental vein.



The Aloof
Sinking

East West

The sombre, lilting and occasionally crashing tones of The Aloof go hand in hand with a deserted skyline and thundering rain. Clearly, The Aloof are from melancholy city and with the haunting strings, reverbing vocals and fuzzy beats furnished with brief traces of techno, 'Sinking' cuts itself free from music pigeonholing and just impresses with its richness and variety. Hardly one to stick on to liven up a party. (even the 'Come on over here and have some fun' refrain in 'Stuck on the shelf' is delivered with depressing morbidity) but as sinking feelings go, it's certainly more enjoyable than most.

Monty Python and the Holy Grail

- 7th Level
- PC CD-ROM
- £40

CD-ROMs that take films as their starting point usually turn out to be as appealing as a bath full of dog turds. Thank the Lord, then, for 7th Level, which has ridden in like a knight in shining armour - or at least, the late, great Graham Chapman as the hapless King Arthur and his trusty coconut-shell steed - and somehow redeemed the game-of-the-film genre. If you get past the hilarious parody of a CD-ROM registration form, you'll find yourself in a proper interactive version of the film, with added digital Pythonisms, and a game as Arthur passes through each location. The games are exactly what you'd expect the Python boys to come up with if they turned a hand to games development - and bear in mind that Eric Idle executive-produced this effort, and Terrys Jones and Gilliam were also involved. The games have titles like *Spank the Virgin* and *Catch the Cow*, and there's a delightful version of *Tetris* with dead bodies instead of bricks. Even cheekier is *Knights In Combat*, a delicious spoof of *Mortal Kombat* which, naturally, involves reducing the Black Knight to a limb-less torso. Make it to the end and you'll find the long-lost King Brian sketch - which appeared in the official script but not the film itself - with accompanying Gilliam animation. Just like the rest of the CD-ROM, this is a real treat. Remember, kids: just Say 'Ni!'





One of the funniest sections of the game is the *Mortal Kombat* rip-off, *Knights In Combat* (top and right) where you must hack off your opponents arms and legs. This will no doubt give the designers of that infamous beat 'em up series a few unsavoury ideas

Continued next page

Sharp VL H420H ViewCam

Developer: Sharp
Release: Out now
Price: £1,200

When camcorders first started to appear on the consumer market, they were complicated things, way out of the technical reach of most budding amateur film makers. The Sharp range of ViewCams is a big step forward because, frankly, any fool can use one. While you record, the object of your attentions is shown on a full colour LCD screen which is also used for playback. Simple.

Of course, apart from ease of use, one of the best things about the ViewCam is the fact that the lens and screen rotate independently, which means that you can film from all sorts of strange angles without losing sight of whoever or whatever is actually being recorded. Sharp suggests that this feature is very good for filming over the heads of crowds at sporting events, although liberal-minded readers could probably think of a few slightly more exciting alternatives.

To accompany the ViewCam range, there is also a large selection of accessories, including a TV Tuner pack (the VLH460 can even be used as a video recorder) and a video printer which can run off 106x78mm, 256 colour prints directly from your camera. The possibilities just get more and more interesting...



The screen and lens rotate separatley. For filming over peoples' heads apparently

Sharp VL H430 ViewCam - Contact tel 0800 262958

Hewlett Packard HP 200LX palmtop PC

Developer: Hewlett Packard
Release: Outnow
Price: £440 (1Mb), £550 (2Mb)

As the pace of life quickens, it seems that people are finding it more and more difficult to separate themselves from their jobs - pagers, mobile phones, car faxes, lap top computers - the key advertising phrase of the digital age is, 'be in the office, even when you're not in the office'. 'Free time', then, is an endangered term and Hewlett Packard aren't helping matters by coming up with such attractive little gadgets to further the decay.

Measuring just 16x8.64x2.54cm and weighing an anorexic 300 grams, the HP 200LX is a portable PC that's so small the term 'lap top' simply doesn't suffice: it is in fact a 'palmtop'. Despite the diminutive stature, though, Hewlett Packard's machine boasts up to 2Mb of RAM and a number of software applications such as *MS-DOS, Lotus 1-2-3, Appointment Book, Phone Book, Data Base* and *Note Taker* - all built into ROM.

Importantly, the HP 200LX can also be linked up with the office PC and will quite happily send or receive email. So you never have to be away from work again. Scary thought.



The HP 200LX PC is small enough to fit in the palm of your hand, but still reasonably powerful

Hewlett Packard HP 200LX PC - Contact tel 0990 474747

CD-ROM continued

Spin Control

- Mixman technologies/Imax
- PC CD-ROM
- $35 (import)

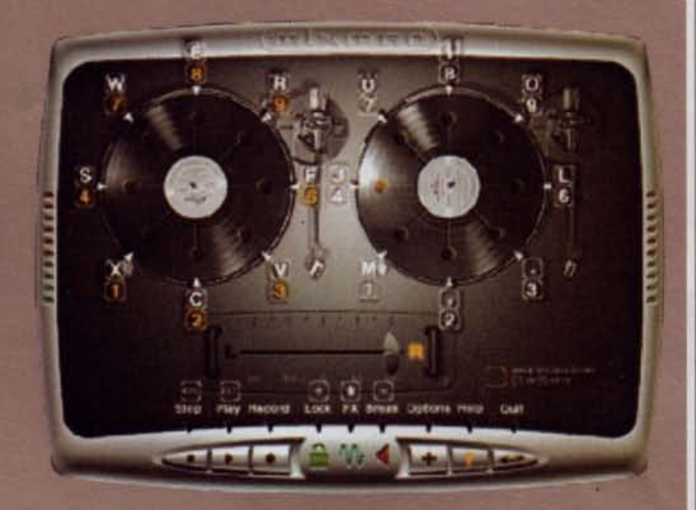
It is always refreshing to see CD-ROM's being used in a totally new and innovative way, and that's exactly what *Spin Control* does - the second CD-ROM this month to turn the PC into an interactive mixing deck.

Using it is remarkably simple. First of all, budding DJs have to select a dance tune to mix: there are eight US underground tracks to choose from, inc. dub/house works by Bass Kittens and Deluxe. Next, users go to the mixing deck where the song is separated into 16 tracks - bass line, hi-hat, percussion fills, etc. To play a track, you click on the relevant point on one of the records, or use the corresponding key on the keyboard. Other tracks can then be set off too, and all can either be locked on or controlled manually (so that, when you take your finger off the relevant key, the track stops). By doing this, it is possible to gradually build up and record a completely individual mix, using the bare components from the original tune.

There are a couple of other tricks available (an echo-style effect, for example, which makes each track sound as though it was recorded in a wind tunnel), but that's basically it - yes, it sounds boring and limited, but the end results are usually pretty impressive and its very easy to spend ages happily constructing complex tunes. In any case, the designers have kept things simple on purpose: the product is aimed at anyone over 12.

Perhaps *Spin Control* would benefit from a few more features, but as an introduction to mixing, this is good fun for those who are 'up for it'.









In *Spin Control*, budding DJs can select a song from the first screen (above left) and then remix it on the second (above right and main)

books

Escape Velocity

- Mark Dery
- £5.99
- Vintage
- ISBN 0-09-959431-5

It is time to question whether a bipedal, breathing body with binocular vision and a 1,400cc brain is an adequate biological form. So muses Stelios Arcadiou, high priest of Cybernetic body art, and one of a burgeoning community of souls looking, as we hurtle towards the millennium, to achieve escape velocity: to weld 'the transcendentalist impulses of the 1960s' to the 'technophilia of the 1990s' and in doing so, escape from the imminent obsolescence of the flesh towards a future where man and machine will be united in cyberspace.

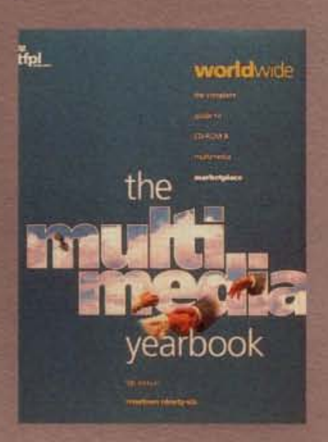
Dery's superb exploration of cyberculture's horror and resentment of the body (the 'drag coefficient' in any technological environment) takes in figureheads as diverse as David Cronenberg, JG Ballard, and Trent Reznor of Nine Inch Nails, as well as every conceivable outpost of cyberia, from Neo-Paganism to the Neuromantics, prosthetics to the Prodigy, Tetsuo: Iron Man to Transhumanism – and, of course, the sad nameless musician who fornicates with his Mac. Refreshingly, Dery has little time for the vague high-sounding pontifications of Mondo 2000 editor, RU Sirius, and his ilk, and is far more concerned with the distressing levels of personal and social alienation that lurks behind all this 'digital mysticism'.

It may be true now that 'those who cannot control machines are, more and more, controlled by those who can' but with human-level machine intelligence predicted to hit by 2020 that hierarchy may be about to change. **Edge** readers beware.

The Multimedia Yearbook

- G Pascal Zachary
- £8.99
- TFPL and Macmillan
- ISBN 0-333-662-56-3

There are pitifully few books in this field deserving of the accolade 'indispensable' but for anyone even remotely connected with the computer industry this is surely one of them. The Multimedia Yearbook is a truly compendious volume, expertly designed and rammed to the gills with pertinent information. Attractively and logically arranged, it boasts comprehensive listings for 10,000 companies active in games and multimedia worldwide (names and addresses, hardware and software involved, platforms supported, the list goes on...) as well a glossary of technical terms, a conference calendar and a range of editorial sections covering markets (facts and figures), interviews (Nathan Myhrvold from Microsoft, Chris Deering from Sony, and the like), national profiles, and publishing issues.



Inevitably, in such a volatile market, some of the editorial content is out-of-date even as it goes to press but nevertheless there is much wisdom contained herein: 'The entire 32bit market is a footnote in history' – Bob Faber (3DO Europe). Above all, however, the Yearbook is a fine resource tool. Expensive? Maybe. But whoever said the best things in life are free?

Competition

Aura Interactor Competition

As covered in last month's **Edge**, the Aura Interactor is a new device which you strap to your back and then plug into the audio socket on your TV, Console or PC. When switched on, the Interactor vibrates in response to bass emanating from the sound source, so plunging the player/viewer into the on-screen action. That is, as long as the on-screen action happens to include low rumbling noises.

Edge has now had chance to test one of these devices and it is indeed a very strange experience. To begin with the vibrations are a bit shocking and off putting – few players, after all, will be used to the sensation of getting rattled from behind while playing *Ridge Racer*. However, pick the right game and the Interactor does add a certain visceral element to the proceedings. **Edge** suspects racing titles will benefit most from the contraption, although playing *Quake* becomes a whole lot more scary with one of these things buffeting your back bone everytime the onscreen character is even approached by a projectile.

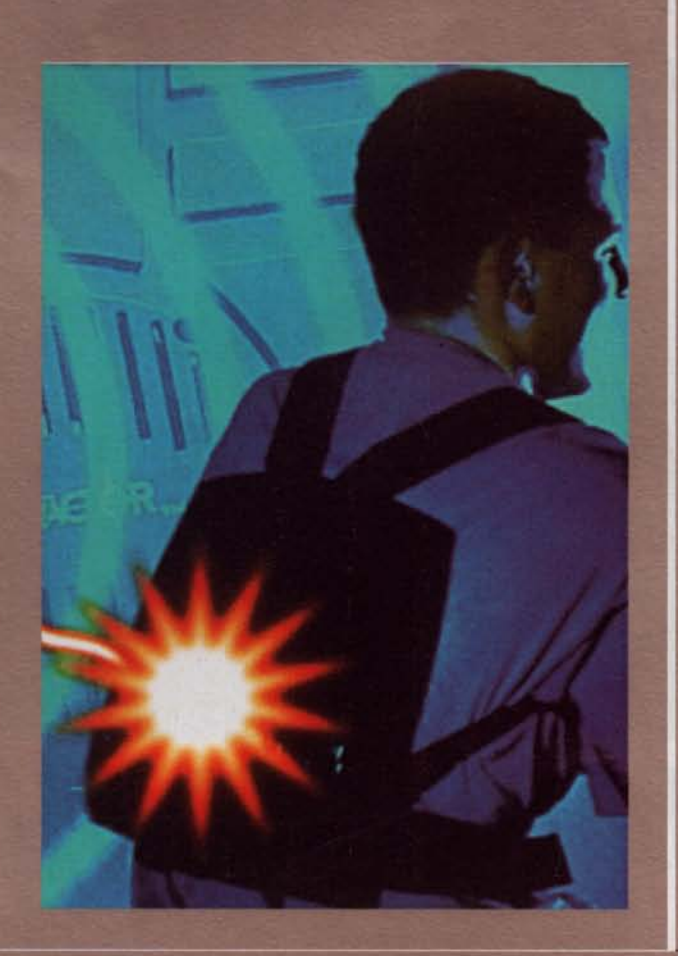
The trend for input/output peripherals is a burgeoning area (a joystick which vibrates in response to bass sounds is due out soon), but, given the average gamer's obsession with immersion, coupled with the quality of peripherals such as the Interactor (although the device comes with several cords and sockets, it is very easy to set up and feels reasonably sturdy), it will probably develop into a key area of videogaming. Stranger things have happened.

In association with Aura, **Edge** has six Interactor units to give away, so that readers can find out for themselves how being shaken vigorously can improve the gaming experience. To stand a chance of winning one just answer the following question:

Q: Earth tremors are measured on the Richter scale. What is the highest number on that scale?

Please send your answer on a postcard or the back of an envelope to Interactor competition, **Edge** Magazine, 30 Monmouth Street, Bath, Somerset, BA1 2BW. All entries must be in by Friday, 20 September.

Note: **Edge** bins multiple entries without remorse



Broken Sword The Shadow of the Templars

LucasArts is regarded worldwide as the premiere designer of point-and-click interactive cartoon adventures. All that is about to change. *Broken Sword* starts the point-and-click Revolution



As the game opens, American George Stobbard is recovering from witnessing the destruction of a Paris bistro. It's not long before his mind has something less threatening to focus on





The mythic rivalry between UK and US developers has never been more obvious than the genre of the graphic adventures. The British have spent the last few years playing a game of catch-up, in particular attempting to emulate the careful narratives and classy presentation value of LucasArts' efforts. With *Broken Sword* the tables have at last been turned. For with this, its third attempt at a point-and-click adventure game, York-based Revolution Software has finally escaped the shadow of *Monkey Island* et al and taken the graphic adventure to new levels, in terms of both story and spectacle.

In building its trans-European plot around the legends of the Knights Templar, *Broken Sword* succeeds in appearing weighty and complex without ever losing its sense of pace. The undiscovered treasure of this Crusades-era order of monks acts as the McGuffin, but around this portentous starting point a comedic series of episodes have been crafted, enabling the game to focus on a large amount of character interaction and numerous action-move situations. Many of which would fit well in an Indiana Jones flick, in fact.

The mixture of legend and modern day intrigue isn't the only interesting plot device used here, for Revolution has also settled on American George Stobbard as the central protagonist - a move which makes sound commercial sense and also introduces a stranger in a strange land element. Indeed, you are left in no doubt that the hero has a chip on his shoulder about his treatment from Europeans, and as the adventure progresses many situations and conversations arise which play on this suspicion.

Taking in locations as diverse as Paris, Syria and Ireland, much work has been done to toy with amusing stereotypes, while at the same time evoke a flavour of the various locales. Hence the French police exhibit Clouseau levels of madness and take time out to ridicule Belgians, while an Irish pub is authentic right down to the cask cellar. Indeed, perhaps the greatest strength of *Broken Sword* is the attention to such details, ensuring that every voice, every sound, and every visual element is polished to the 'nth' degree.

Animated cartoons have been used as the graphical reference point, with an ex-Don Bluth Studios/Cosgrove Hall animator numbering amongst the many artists who have worked to create what must be the most lively game sprites ever. What's more, they visibly interact with on-screen detail and usable objects - a genuine rarity. Whereas previous LucasArts efforts such as *The Dig* suffered at the hands of low resolution pixellation, the clean SVGA images of *Broken Sword* possess great fluidity and style, with keen use of sound effects and voice treatments furthering the filmic level of quality. Music also plays a large part in mood enhancement

Format:	PC/Mac CD-ROM
Publisher:	VIE
Developer:	Revolution
Price:	£40
Release:	Out now





The care taken to animate the various characters with an individual style is most evident when they interact with the scenery. Here the hero prepares to hide inside the museum mummy until night falls (left). The SVGA artwork by far exceeds the competition in games of this genre

with around three hours of 22KHz-sampled, context-sensitive music from professional composer and conductor **Barrington Pheloung**, whose previous credits include the soundtracks for several movies, as well as the Inspector Morse TV series. It's beautifully orchestrated and adds immeasurable atmosphere.

It's the smooth control interface and satisfying scriptwork which consolidate *Broken Sword*'s position as a milestone in adventure gaming

This aspiration to real movies also stretches to the inclusion of several fully animated cut-scenes which, through their placement between episodes and their exciting content, never interrupt the game flow. And because of the dazzling graphical quality of the main game sprites and backgrounds, such interludes are stylistically appropriate. A rare feat indeed.

Undoubtedly however, it's the smooth control interface and satisfying scriptwork which consolidate *Broken Sword*'s position as a new milestone in adventure gaming. The former builds upon accepted point-and-click controls, but further refines the automation by switching the main cursor to a talk icon, exit icon, collect or use icon as appropriate. Object manipulation is achieved using cameos of the various items in Stobbard's inventory – a standard practice for graphic adventures. But *Broken Sword* also extends this idea to the conversation system, providing players with a row of subject icons when communicating with other characters. Hence, a character can be questioned about a missing briefcase or strip of cloth simply by clicking on its cameo. It's sometimes possible to gain useful information by continuing to ask about the same item, and conversations can raise new subjects which add further topic icons to the list, making the simple art of conversation a very rich game element. Indeed, much progress in the game is based around asking the right people about the right things rather than simply taking object A to location B and using it on item C – a trick which helps mask the linearity of some passages.

While *Broken Sword* in no way breaks from the accepted boundaries of the traditional form of graphic adventure, it remains a triumph of inventive, witty scripting and near faultless presentation techniques. A fine understanding of the cinematic style, both in terms of audio and video, means that *Broken Sword* goes way beyond titles such as *The Dig*, which betray their computer gaminess with lacklustre visuals and clichéd puzzles. Certainly, the attempts to apply comedy to what is essentially a detective-cum-action scenario isn't always a successful affair. And, with its reliance on accepted control systems and command styles, *Broken Sword* represents a distillation of standard practices more than a new breed of adventure game. Nevertheless, Revolution's latest merits the accolade of best graphic adventure to date and proves there are few things more satisfying than a good story well told.

Edge rating:

Nine out of ten



By poking gentle fun at every nationality – including the English, as depicted by this titled lady – Revolution has made *Broken Sword* something of a comedy of manners

Tunnel B1

Just as the PlayStation's graphical power is being usurped by Nintendo's 64bit experience, German coders, Neon, have produced a game to return the smiles to Sony faces



Who needs hallucinogenic love drugs when you've got *Tunnel B1*: a veritable head trip of fluorescent attack vehicles, brash lighting and visually stunning technicolour explosions



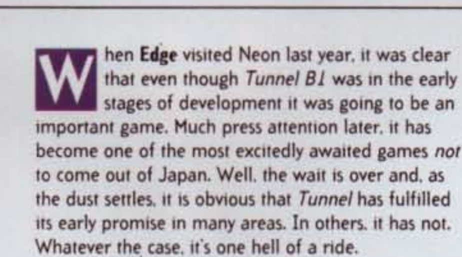




On some stages, the tunnels snake to the surface revealing a dark, smoggy sky and looming buildings

When **Edge** visited Neon last year, it was clear that even though *Tunnel B1* was in the early stages of development it was going to be an important game. Much press attention later, it has become one of the most excitedly awaited games *not* to come out of Japan. Well, the wait is over and, as the dust settles, it is obvious that *Tunnel* has fulfilled its early promise in many areas. In others, it has not. Whatever the case, it's one hell of a ride.

Conveniently, the common *Descent*-meets-*Wipeout* analogy is remarkably accurate. In *Tunnel B1*, the player has to speed through a number of tunnel complexes in a set amount of time, carrying out many different objectives (from simply escaping to blowing up power generators, etc). This is where the *Descent* comparison rings true. On top of that, the player has to navigate the labyrinths in a hovering craft which reacts violently to the slightest twitch on the pad and which moves so fast the player suffers continuously from a malevolent strain of motion sickness. *Wipeout*, then, to a T.



Tunnel is a two-fingered gesture to those who are currently dismissing Sony's machine – it's simply awesome to look at

Tunnel will also draw comparisons with the Psygnosis racer in terms of graphics – both are visually stunning and marvellously stylish. However, whereas *Wipeout* was a swish introduction to the PlayStation, *Tunnel B1* is a two-fingered gesture to those who are currently dismissing Sony's machine. The beautiful lighting, the smooth engine, the brilliantly drawn backgrounds – it's simply awesome to look at. Neon may have cheated by setting their game in confined locations (meaning there's no distance clipping, no scenery pop-up, etc) but it works, so who cares?

The similarities with *Descent* and *Wipeout* don't stop at plot and aesthetics. Both were very difficult games which called for speed, agility, and the total mastering of complex controls. *Tunnel B1*, a bleak and uncompromising game, matches them on all counts. There is nothing here to ease the player slowly in, there is rarely any room for error, and there are no concessions made for those who are unused to the PlayStation's joypad. Every button is used, and primary and secondary weapons systems, booster, accelerator, decelerator, strafe function, speed lock on/off all have to be mastered quickly if progress is to be made. Your fingers ache unbearably after just a few hours of play.

Format:	PS/Saturn
Publisher:	Ocean
Developer:	Neon
Price:	£45
Release:	September





Enemy craft are varied both in appearence and potential threat. Helicopters (right) are the most deadly – they can rise too high for players to attack with conventional weapons. Heat seekers are called for

The fact that each tunnel is a treacherous and unpredictable terrain doesn't help. The floors are littered with crates, barrels full of flammable liquids, road blocks and energy-zapping mines which all have to be avoided swiftly or blown out of the player's path. As well as these docile objects, players also have to be aware of sentry guns firing bullets, lasers, grenades, etc, and enemy craft that patrol the corridors looking for fights to get into. On the plus side, some objects yield ammo and weapons if destroyed, but this means that in order to get through each level *and* get all the secrets, you have to annihilate almost everything.

Charging through each stage, machine guns blazing, is an experience to rival the best demon confrontations in *Doom* for destructive euphoria

Given the proliferation of destructible items, coupled with the large array of weapons open to the player (machine guns, mines, rockets, guided missiles, etc), it will come as no surprise that *Tunnel B1* is a pyromaniac's wet dream. Charging through each stage, machine guns blazing, watching the whole lot explode in front of you is an experience to rival the best demon confrontations in *Doom* for destructive euphoria. The downside of all this pyrotechnics, though, is that it can be hard to pick out important targets in all the smoke and confusion. Often, you'll think you've destroyed a gun emplacement only to find it still shooting at you when the flames die down.

This is not the only frustration. *Tunnel B1* can seem unfairly difficult at times, especially when the seconds are ticking away and the gun in front, barring the way ahead, just won't explode no matter how many times it's hit. Furthermore, there is a lack of diversity in the gameplay: going from one tunnel to the next and blowing things up can get a little repetitive, despite the proliferation of targets and weapons. It is this combination of frustration and repetition that wears down the desire to make progress and ensures that the game isn't quite as compelling as it could be.

Despite this, *Tunnel B1* is hard to leave alone. Never before has a game thrust such a nauseatingly fast and smooth engine onto the PlayStation and very rarely before has the experience of hurtling though a digital landscape been so vivid, so believable and so exhilarating. Adding to this is the simply brilliant orchestral soundtrack – an atmospheric Hollywood action movie score equal to Carpenter's or Horner's finest. If you can stand the often uniform gameplay, this is an overwhelming experience.

But *Tunnel B1* will not appeal to everybody: it is a true gamer's game, at once agonisingly frustrating and fiendishly addictive. For that minority of gamers who found *Wipeout* a merely adequate challenge, *Tunnel B1* is practically an essential purchase, despite the lack of diversity. For everyone else, it is still an influential title, but, in those terrible moments when you have just 15 seconds to complete the level and your craft hits a seemingly impassible barrier, don't be surprised if your sanity starts to slowly drip away...

Edge rating:

Eight out of ten





Neon lives up to its name with some amazing lighting effects. Transparent polygons feature highly in the game







Barriers (left) are an unwelcome sight which can delay the player's craft for many frustrating seconds. Much more pleasing to the eye are power generators (centre) – when you destroy one of these, you're a step closer to finishing the level. Dead ends (right) often contain power-ups

Tobal No.1

Square Soft's first 32bit title, perhaps predictably, adopts the 3D beat 'em up to showcase the Japanese company's PlayStation prowess. But can the designers of *Final Fantasy* compete in the Sega/Namco-dominated arena?



The hi-res, Gouraud-shaded characters and animated backgrounds give *Tobal No.1* a distinctive look





Tobal doesn't boast the quantity of special moves as *Tekken 2* or *VF2*, but there are some nice touches

Format:	PlayStation
Publisher:	Square Soft
Developer:	In-house
Price:	¥5,800 (£40)
Release:	Out now (Japan)

Square Soft's pre-eminence in the RPG market in Japan is undoubted but it's hard to see *Tobal No.1* handing it a similar lead in the Sega/Namco dominated beat 'em up arena. It hasn't done things by halves, though, as it bankrolled the setup of **Seiichi Ishii**'s Dream Factory specifically so that he could create *Tobal No.1* for them. Ishii's track record – he worked on the development of both *Virtua Fighter* and *Tekken* – promised much, but sadly for Square the results, whilst not disastrous, are far from spectacular.

Unlike many of its rivals, *Tobal No.1* does not use extensive texture-mapping, instead opting for the PlayStation's hi-res graphics mode (at 60fps) and Gouraud shading for each fighter. It's one of the first times this mode has been used in-game rather than just for prerendered intro screens and it gives both the characters and backgrounds an impressive sheen. However, the characters in *Tobal No.1*, in common with many beat 'em ups, are highly derivative.

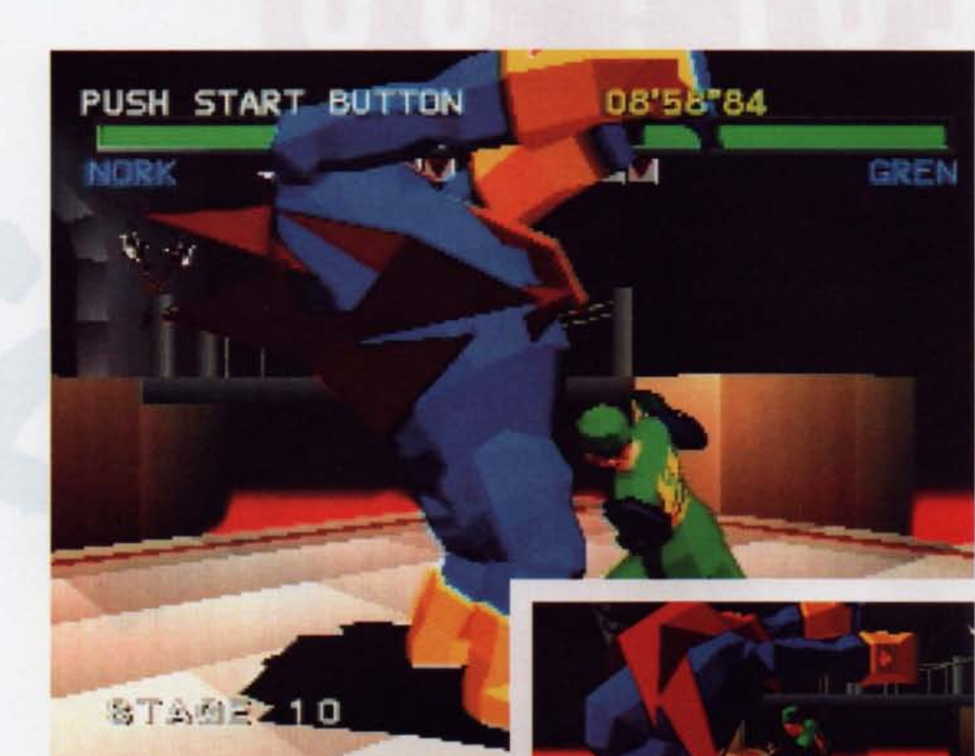
The game has the usual Japanese mixture of martial arts experts, cutesy little folk and over-the-top monsters. All are well designed and animated yet lack any imaginative flourishes or real innovation. For instance, there's Fei, a cackling old man who's very reminiscent of Wang (*Tekken*) and Fo Fai (*Toshinden*), and then there's Chuji, a mohican-sporting Guile (*SFII*) and would-be Jacky (*Virtua Fighter*). Only Mary seems to be a bit of a departure – a butch female bodybuilder who wouldn't look out of place in Flex magazine.

Tobal No.1's gameplay is essentially derived from *Virtua Fighter*, although Ishii's team have attempted to break away from the 'fight-along-the-2D-axis' feel from which most 3D beat 'em ups suffer. A key part of this are the moves triggered by the PlayStation controller's shoulder buttons which allow you to move around your opponent and attack them from the sides or back. In theory, it's a revolutionary concept and, ultimately, the next logical progression for the beat 'em up. In practice, it just doesn't work.

The side-steps taken by a fighter trying to attack via the 'back door' are not only sluggish but pretty small, too. In the time it takes to move around your opponent enough so that they can't attack you, they've rumbled your intentions and either kicked and punched you all the way around and probably killed you, or jumped back and shifted around themselves. It's totally impractical in the heat of a fight and, as the camera position moves as you do, the key pushes to execute this 'shimmy' keep changing, making it an even less attractive option.



The robotic Hom thrusts the demonic Ill skyward. Moves of this complexity are rarely required



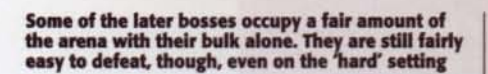
Some of the later bosses occupy a fair amount of the arena with their bulk alone. They are still fairly easy to defeat, though, even on the 'hard' setting





There are three hidden characters, found at the end of the oneplayer game and also within the dungeons of the beat 'em up adventure

However, this isn't the end of Dream Factory's efforts to move the beat 'em up genre forwards. The other major break from mould is the 'quest' mode which, unlike the 'story' modes in certain beat 'em ups, isn't merely a few non-interactive words 'n' pictures



screens delivering a none-too-interesting plot. It's a fully 3D, thirdperson perspective adventure which puts you, as any one of the eight main characters, into an ambitious blend of exploration, agility and fighting.

Instead of being confined to a small ring you have a series of dungeons to navigate. A few new moves are available - you can run and leap, useful for crossing chasms and jumping across the rolling boulders and logs which litter the levels. As you make your way around the dungeons there are monsters to fight, objects to collect and exits to find.

Again, it all sounds very promising but in reality it simply doesn't work. The 3D camera routines just can't cope with life in the confines of a dungeon. When you're navigating the maze-like levels, you've no idea what's going on behind you and can easily get bowled over by logs or step off the precipitous edges of the dungeon. Conversely, the camera swoops around so wildly in fights that walls obscure your view or your controls flip around confusingly.

As for the quest, there's just no depth here whatsoever. All you have to do is trawl around the levels, fight everything you come across, collect everything apart from the poisons and eventually you'll reach the exit. It would make the average text-only adventure look like a masterpiece in ingenious construction. This leaves you with the central beat 'em up which is playable enough but still can't hold a candle to *VF2*, *Tekken* or its stellar sequel.

Tobal No.1 is a competently designed, perfectly adequate beat 'em up with all the standard requirements of hidden moves, secret characters and multiple hit combos. But what was once revolutionary is now merely commonplace, making *Tobal No.1* little more than average. Ironically, only the included demo of *Final Fantasy VII* can begin to save it from beat 'em up indifference.

Edge rating:

Six out of ten




The quest element of the game is a fun addition, but nothing special (left). Expect to see this end sequence (above) on the first day of playing

Saturn Bomber Man

Bomber Man is arguably the best multiplayer fun you can have without using a network, so a tenplayer version should be the best game ever... right?







Although the oneplayer *Bomber Man* (above) does manage to entertain with its off-the-wall humour and bizarre bosses it pales against the fun of the multiplayer games (right)





***Saturn Bomber Man* contains not one, but two flavours of oneplayer game – story and master mode**

It's changed little since its inception on Nintendo's Famicom system way back in 1985, and for Hudson's seminal *Bomber Man* series the saying 'if it ain't broke, don't fix it' is still a rule the company follows to the letter.

Like its SNES, PC Engine and Game Boy predecessors, *Saturn Bomber Man* makes no attempt to dazzle with graphical frills, preferring to rely on its tried-and-tested gameplay to carry the day. Despite the more powerful hardware, however, it does seem to be a more restrained game – even with a roller-skate speed power-up the characters seem to be moving around in quicksand. There are no touches that haven't seen the light of day in other versions and many of the multiplayer arenas merely confuse in their complexity. For those without any friends to hand, the usual oneplayer story-driven game is available, although without real competition its rather ploddy gameplay soon makes it a chore rather than a pleasure to play. Any challenge it may have offered is totally destroyed by infinite continues and even a save-game feature. There's also a 'master' game which has a more puzzle-orientated slant but both singleplayer options only reveal just how much *less* fun the whole *Bomber Man* concept is when playing on your own.

What rescues *Saturn Bomber Man* is, like every *Bomber Man* game, its multiplayer option and, for this version in particular, the inclusion of Hudson's previously exhibition-only tenplayer extravaganza – *Hi-Ten Bomber Man* – an inclusion justifying the purchase alone. Of course the only problem is that *Hi-Ten* was originally a custom setup designed to be played on a large widescreen TV and even by employing the Saturn's hi-res mode the proceedings are desperately hard to follow on anything less than a home-cinema monster. Fortunately Hudson has wisely made each onscreen participant a completely different character rather than just a differently coloured Bomberman, making it easier to keep track of your player.

It's a shame *Bomber Man*'s designers have put more effort into the oneplayer mode than making genuine innovations where it counts. An enhanced 3D mode would have shown they'd tried, even if everyone merely ended up playing the original, but it seems that particular route will be left for the recently announced Nintendo 64 version.



Even with a new range of creatures to hinder Bomber Man's progress, the going is easy

Format:	Saturn
Publisher:	Hudson Soft
Developer:	In-house
Price:	¥6,800 (£60)
Release:	Out now (Japan)

Edge rating:

Seven out of ten

Andretti Racing

The racing game has tragically become the bread and butter of 32bit videogaming, yet software companies still churn out variations on the theme. EA tries to improve on a tyred genre







Rather than concentrating on one particular driving genre, *Andretti Racing* provides both stock car racing and indy car racing. With 18 tracks to choose from and a split-screen twoplayer mode, the result should keep speed freaks satisfied for a lengthy time

When confronted with the 'what sort of racing title shall we develop?' dilemma, software companies usually choose one genre, be it *Daytona* clone, serious racing sim or *Micro Machines*-esque cartoon romp. Few seek to cover their bets by providing more than one genre in one product - perhaps acknowledging the fact that it is quality and not quantity that attracts punters.

Unperturbed by this, EA has decided to offer both stock car racing and indy car racing in *Andretti*. Fortunately, the game suffers little as a result. Players can choose from single race, complete tournament and twoplayer options, and can alter physical aspects of each car, regardless of which racing style is being attempted. Sim heads will be disappointed that there are only two cars to choose from - one for each racing style - and you can't fiddle with quite as many aspects of the vehicles as you can in *F1*, but everyone else will probably be relieved - this is simply a game, after all.

In contrast to the lack of cars, there are 18 different circuits (shared by both racing options) ranging from the blindingly easy Thunderdome to the outrageously complex Grand Rapids. The latter has some quite ridiculously tight corners to navigate and, annoyingly, although the player has to slow down to a snail's pace to get by, the computer-controlled cars fly past without a care in the world. Will game designers ever realise that the key to convincing AI is creating imperfection rather than faultlessness?

Graphically, the game is adequate if not spellbindingly beautiful. Some of its textures are a little tatty and there's none of *Wipeout*'s visual oomph, but the engine is impressively slick and it suffers no slowdown, even when the screen is full of cars.

Despite sharing the same tracks, the indy car and stock car options naturally provide different racing experiences. In the former, the car reacts with vicious rapidity to featherlite touches of the pad, whereas in the latter the car controls are sluggish and heavy. In many ways the stock car is more fun - it's easy to control, you can power slide round corners with Starsky and Hutch-like abandon, and shunting other cars off the track is a legitimate tactic. In comparison, indy car racing is rather more staid and cerebral.

The split-screen twoplayer option is one of the finest available - it's great fun, you can knock your opponent off the road, and the catch-up system is well toned and fair.

Andretti is a title that attempts to provide a bit of everything, and succeeds on many counts. **E**

Edge *rating:*

Seven out of ten





Crashing temporarily disables the car, rather than destroying it (top). The debris effect is attractive

Format:	PlayStation
Publisher:	EA
Developer:	In-house
Price:	£45
Release:	September 20







***Andretti*'s twoplayer mode is one of the best around – the catch-up routines ensure the race will be bursting with close-contact experiences**

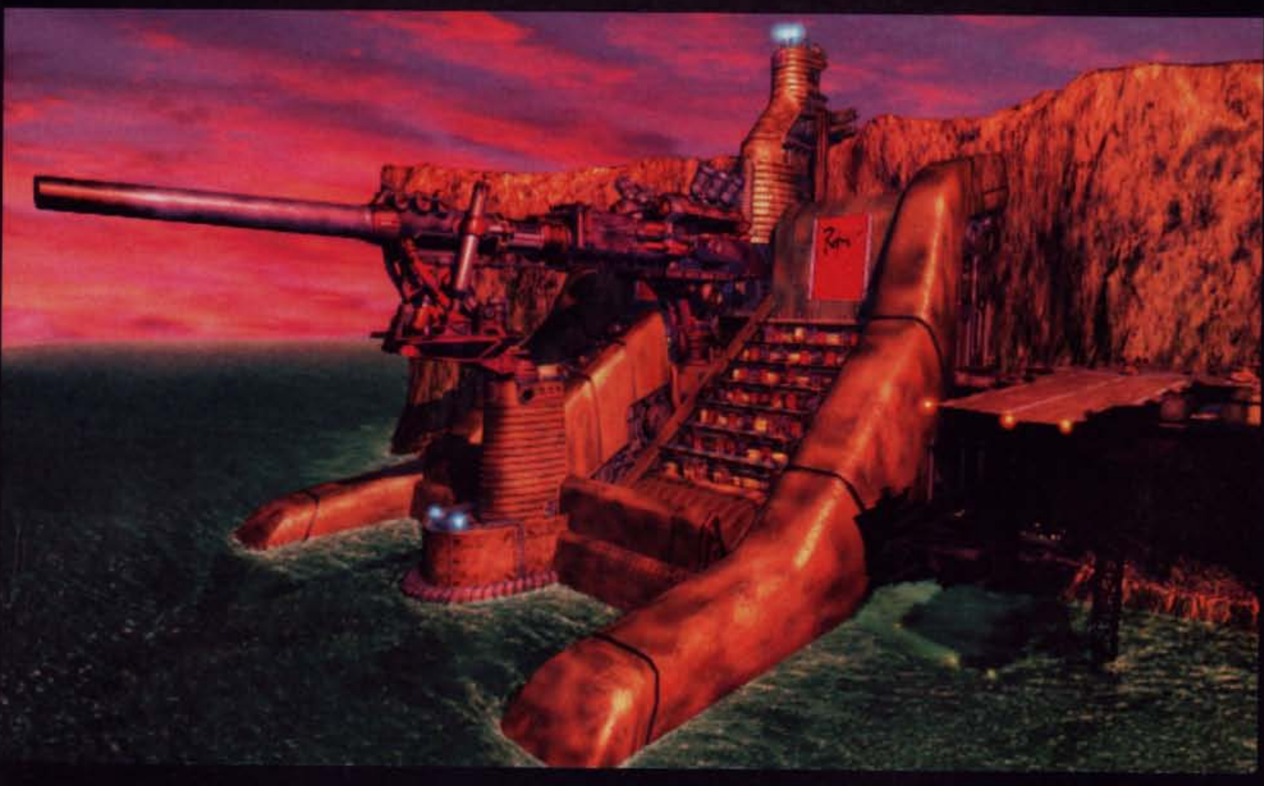
Gallery

Edge explores the world of computer-generated imagery, showcasing the work of the leading graphic artists. This month, Square's epic *Final Fantasy VII* sets impossibly high standards

Japanese fantasy artwork comes no more stunning than in Square's forthcoming PlayStation RPG, *Final Fantasy VII*. While utilising natural landscapes to set the scene for the artwork, Square's artists have elevated the imagery to a status more worthy of Tolkien's Middle Earth, combined with old world imagery reminiscent of Hayao Miyazaki's classic anime film, Laputa. This immaculately conceived airship (right) or 'the machine in the sky' as the Japanese press have referred to it, clearly demonstrates Japanese design at its best, and uses incredibly rich colours to illuminate the sky and surrounding objects.

All images rendered in *Softimage* on Silicon Graphics by a team of artists working within Square Soft's Meguro HQ, Tokyo.









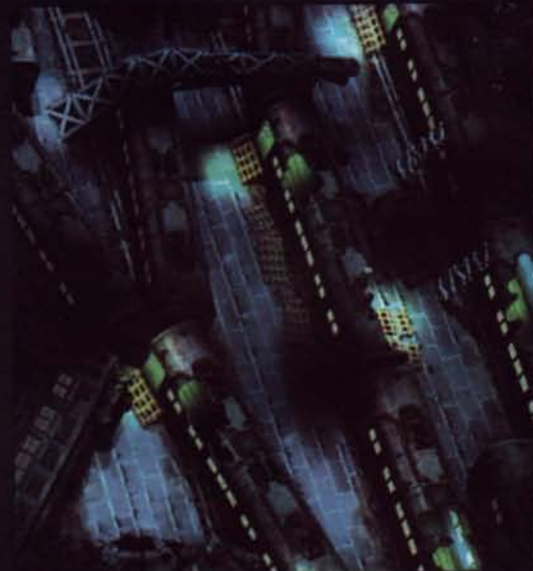
Further evidence of Square's breadth of vision when it comes to realising game environments. The gigantic gun emplacement is gloriously textured (above), while the sheer volume of detail in the various indoor locations (left) is simply staggering. Note the objects for sale in the hardware shop (far left).

Hard to believe, but these trains from Square's *Final Fantasy VII* are in fact 3D renders rather than hand-drawn artwork. Continuing the 'steampunk' imagery first seen in the ghost train sections of *Final Fantasy VI* (*FFIII* in the USA), the artists have applied these designs to the stunning intro sequence of the *FFVII* demo where the game camera swoops over the city to close in on the train pulling into a station. It's a stunningly cinematic showcase.

Modelled, animated and rendered in *Softimage* on Silicon Graphics by Square Soft











Square's *Tobal No. 1* (see page 86) is the Japanese company's first attempt at a 3D beat 'em up in the mould of *Tekken* and *Virtua Fighter*. The actual game uses Gouraud-shaded polygons for the main fighters and updates the screen every 60th of second. In contrast, these static shots took ten minutes each to render.

Created by Square Soft on Silicon Graphics using Softimage



One of the most distinctive elements of Sega's arcade classic, *Out Run*, was the suntanned, wild haired Californians that sat in each of the cars. Now, thanks to Sony's forthcoming racer, *Porsche Challenge*, the in-game driver is about to come of age.

Pictured here are rendered versions of three characters from the game. At the front is the fetchingly named Barbara (a model), behind her is the slightly shifty looking Marco (a mechanic) and at the back is Beats (no, really), a DJ. What a model and a DJ are doing in a racing game, Sony only knows, but they're beautifully rendered and reasonably life-like.

Modelled, animated and rendered in *Alias* on SGI by **Jason Millson** from Sony Computer Entertainment

CGI training

University course nurtures 3D animators' ambitions

The work to the right has been created by **Ravinder S Ruprai**, a graduate of the BA (Hons) Art, Design and Media degree at the University of Portsmouth. The pictures are taken from a short animation, *School Days*, which formed part of Ravinder's final year computer animation course. 'The project was derived from a study undertaken, investigating the various problems associated with videogames,' explains Ravinder. 'The focus was gender representation, character identification and game content, and one of the conclusions drawn in my accompanying dissertation was that, with videogames, simple forms of narrative require the use of, and consequently reinforce, stereotypes'. So it's not just about drawing pretty pictures then?

According to course tutor, **Mark Way**, the quality of Ravinder's work is not an isolated phenomenon - the graduates of the Computer Animation course at Portsmouth University have gone on to find employment in companies such as Sony Computer Entertainment, Rare and Bullfrog. A new course in Computer Visualisation is due to start in September.

Anyone interested in either the BA Art, Design and Media course or the new BTEC in Computer Visualisation should speak to Mark Way or David Jones, tel: **01705 843820**

Ravinder rendered using *3D Studio 4*, with *Adobe Photoshop* for the creation of texture maps and *Premiere* for editing.



By sticking a pair of spectacles on inanimate objects, Ravinder S Ruprai has undertaken one of the first rules of animation – attaching life to otherwise static tools. Other examples of this technique can be seen in Shigeru Miyamoto's *Mario* worlds – how clouds have smiley faces, walls have eyes, and most of the baddies are in fact personifications of still life. The viewer is thus immediately drawn into the picture and a vivacity is given to the animation itself – a task that's much harder to do than it seems

Sega's premiere 3D beat 'em up enters the third stage of its evolution, realising an astonishing new level of graphical quality. Plus, AM1 jumps on the jetskiing bandwagon with *Wave Runner*

Virtua Fighter 3

In some respects it is a shame that Sega has elected to utilise the *Virtua Fighter* theme to demonstrate its Model 3 technology – a fully fledged sequel to *Daytona USA* would have been **Edge**'s preference – but *VF3* is shaping up to be an impressive debut nevertheless.

The first playable version, demonstrated by the game's lead designer **Yu Suzuki** at a private demonstration which **Edge** recently attended in Tokyo, has seven playable stages of an intended finished quota of 12.

In previous versions, stages had been presented as typically flat fighting zones, but they have been updated to feature a unique twist – varying ground levels to negotiate during battle. One stage includes a stone stairway whose relief fighters adapt to and even use to their advantage in battle, more potent attacks being possible when confronting an enemy from a higher position. The correlation of characters' movements and their surroundings is exceptional, with no polygon break-up evident.





One neat touch is the transparent water effect in Jeffry's stage (right). Expect factors like these to be more than just aesthetic, however. More traditional moves (left) are still available, of course

Other stages poised to impress include one set in Hong Kong featuring a curved building roof; a desert stage, where combatants will leave footprints in the sand while eddies swirl in the background; another set in a river, where combat takes place partially submerged in water; one in a subway station, where trains hurtle past in the background; and a sumo arena featuring a mountainous backdrop with a sea generating incredibly realistic-looking crashing waves.

Sega's AM2 R&D department has paid particular attention to the textures applied within the game, with stonework and wood details looking especially realistic.



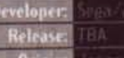
The snow level is especially stunning (above). Sumo wrestler, Takaarashi (top)



The level of graphical detail in *Virtua Fighter 3* is astounding, demonstrating the Sega/Lockheed Martin Model 3 technology perfectly. The island almost looks real



Yu Suzuki, *VF* designer and lover of fast cars



Developer: Sega/AM2
Release: TBA
Origin: Japan

Fighter's Impact

Taito's commitment to the arcade has waned in recent years, although its latest release, *Fighter's Impact* (below) – a 3D fighter in the mould of *VF2*, *Tekken*, et al – looks set to compete with other high-end fighters such as Capcom's *Star Gladiator* and Namco's *Soul Edge*. With less than state-of-the art visuals, it's possible that Taito's board could be running on System 11 technology, although the company has made no such announcement. The company also has a PlayStation version of its 3D *Psychic Force* beat 'em up [illegible] well under way.





and bringing the game's distinctive look even closer to reality.

According to Yu Suzuki, *VF3* is not an 'optimised' version of *VF2*: his team started from scratch when they sat down to conceive it. Apparently, when the *Virtua Fighter* series was born, its control was only ever going to be via a joystick and two attack buttons, and it was only later that the now-customary 'block' control came into the equation. *VF3* has taken the series' controls a step further – there's now a fourth button which affects an 'escape'. According to Suzuki, this can be used to pull away from an opponent and get in a counter strike.

Despite this increased level of complexity, Sega intends *VF3* to be more accessible than *VF2*, so that novice players will be able to get as much out of it as those accustomed to the nuances of the series – a shallow difficulty curve will encourage beginners while a hugely comprehensive range of combos will appeal to hard-core veterans.

AM2 has updated just about every aspect of the previous games, even going as far as to incorporate more dramatic finishes to bouts – in the mountain temple area, for example, fighters can be knocked over the cliff to plunge down and crumple on the rocks below.

With more variably attributed characters than before – including the sumo wrestler Takaarashi, whose fighting style is markedly different than the others' – and its myriad new gameplay tweaks, *VF3* is set to be a major step forward in the 3D beat 'em up field. And its utterly astonishing graphics certainly won't do it any harm, of course.





Takaarashi, *VF3*'s new super heavyweight Sumo wrestler, squares off against Lau (above). Shun Di and Lau (left) will return to *VF3*, albeit with advanced attack mechanics

Wave Runner





Jetskiing games seem to be all the rage at the moment, but with Sega cooperating with Yamaha it could prove to be the coin-op to watch

Developer:	Sega/AM1
Release:	TBA (UK)
Origin:	Japan

With Konami's *Jet Surfer* coin-op out already in Japan, Namco's *Aqua Jet* coin-op nearing completion and Nintendo's N64 title, *Wave Race 64*, due in September, the surge in popularity of jetskiing videogames is as prevalent as it is mysterious.

Never a company to miss out on a trend, Sega has its own contribution, *Wave Runner*, waiting in the wings.

Produced in cooperation with the Japanese jetski manufacturer, Yamaha, the coin-op features the most realistic cabinet yet seen in a title of its nature – Namco's and Konami's units incorporate a driving position and feel that is quite different from the real thing, but Sega has developed an ergonomically sound cabinet which can be used from a seated or standing position.

Based upon a tropical island in the pacific, the game offers two circuits around which players can jetski. The first course twists through the island's canals (thus preventing an excess of waves to disrupt the player), while the second surrounds the island (and is hence more susceptible to water conditions).

With the opportunity to link up to four cabinets, Sega's water-based effort certainly has its rivals beaten on multiplayer terms.





Racing on water should prove to be a compelling experience for arcade raceheads

Sega Ages

Sega resurrects some of the coin-ops that made it the premiere arcade developer over a decade ago. It can promise Saturn owners great graphics, at least...

Sega's position at the forefront of cutting-edge coin-op development is taken for granted nowadays, but 11 years ago it was just another manufacturer putting out scrolling 2D affairs - albeit high quality - such as *Golden Axe* and *Shinobi*. Then, in 1985, its AM2 department developed the sprite-scaling technology which spawned *Space Harrier*. Now out on the Saturn in Japan - minus the hydraulics - the game is the first release in the *Sega Ages* range.

Because of the original coin-op's hardware design, the conversion team has been forced to emulate its code rather than borrow it, resulting in a not-quite-perfect version. It nevertheless replicates its parent closely, with a soundtrack that is spot-on, including the infamous speech sample: 'Welcome to the Fantasy Zone - get ready!' and graphics capturing the coin-op's bold, lurid flavour convincingly.

With more full-on gameplay than more recent Sega 3D shoot 'em ups, such as the *Panzer Dragoon* series, *Space Harrier* will find fans with Saturn owners both fresh and craggy of face. It's a game that's always been derided for shallowness, but there's no denying its ability to draw the most ferocious skills out of players as they battle some of the oddest baddies ever seen.

Out Run, meanwhile, has never suffered from detractors, and the Saturn version - due for release in Japan mid September - is shaping up to be similarly true to its parent. The coin-op's legendary music has been stuffed straight onto CD, and purists will be pleased to note that such painstaking details as your car's Ferrari badge inverting when you change direction are present.

Afterburner, the runt of the litter, due a week after Out Run in Japan, naturally bears scrutiny even less well than it did when its super-lightweight gameplay was wrapped up in an expensive coin-op cabinet.

Sega UK's confirmation that it will be releasing a three-in-one compilation for Christmas will no doubt be heartily cheered by those wishing to trip back to the birth of revolutionary, fast-action 3D coin-ops.









Sega's seminal racing game *Out Run* introduced gameplay twists such as split routes (top right), rolling hills and glorious crashes (right). The Saturn version is an impressively accurate replica of the 1986 coin-op





All the enemies are as striking in '96 as they were in '85

Format:	Saturn
Publisher:	Sega
Developer:	In-house
Price:	¥3,800 (£25)
Release:	See above







Sega's US air force-style 3D shoot 'em up, *Afterburner*, was always more about graphics than gameplay, but in today's polygon-saturated world it stands as an even weaker game than it did in the eighties

Bubble Bobble

Taito's ultra-cute coin-op, *Bubble Bobble*, and its sequel, *Rainbow Islands*, are finally receiving the 32bit conversion that they rightly deserve

Richer backdrops give *Islands'* enhanced mode more dpeth

Acclaim's forthcoming collection of some of Taito's finest coin-ops, currently being crafted under the catch-all title of *Bubble Bobble*, contains both the original game and its sequel, *Rainbow Islands*.

'The conversion is even more accurate than the Amiga version which itself is renowned for its accuracy in gameplay and graphics,' says **Steve Turner**, managing director of Graftgold, the developer taking charge of the *Rainbow Islands* part of the equation. 'We had enough colours to reproduce the graphics exactly, although we've included an enhanced look which uses the technology of today's machines – but we were very careful to keep the flavour and style of the original graphics rather than replace them.'

The company's efforts manifest in a richer colour scheme throughout, with significantly more detailed sprites and backgrounds than those of the original.

It's more difficult to replicate gameplay than graphics, though, and it was here that Graftgold faced potential difficulty. 'The code wasn't available so we had to reinvent the wheel,' explains Turner. 'This was done when the Amiga conversion was developed; our method involves videoing the entire game for reference, but mainly playing each part side-by-side to compare the feel and tweaking until it's perfect.'

The legendary *Bubble Bobble* is being converted by Probe. 'It's been fairly easy to convert the mechanics of the game to the PlayStation,' reckons lead programmer **David Broadhurst**. 'The machine can easily handle all the sprites in the game without breaking into too much of a sweat. The only difficulties come from converting the game without any source code, which has meant playing the game over and over again to work out what's happening. We did get hold of some of the original game design documents, which proved really important as some of the logic relating to pickups, etc, never would have been worked out.'

Many have deliberated the enduring popularity of the *Bubble Bobble* series, and Broadhurst has clear opinions on why it's such an evergreen title: 'I think people still play the game today because real gameplay is timeless. The game doesn't rely on 3D, FMV or QSound or whatever. It's merely a lesson in what good gameplay design should be.'



The *Rainbow Islands* conversion has faithful gameplay, but also adds an enhanced graphics mode







While not using coin-op code, Probe's conversion of *Bubble Bobble* still captures the original's sheer playability. The combination of a twoplayer mode and varied levels make it a hugely addictive challenge

Format:	PC/Sat/PS (shown)
Publisher:	Acclaim
Developer:	Probe/Graftgold
Price:	£40
Release:	September



Bubble Bobble 2

The conversion of the original game isn't finished, but work on its sequel is underway

Virgin has nabbed the rights to bring the true sequel to *Bubble Bobble*, *Bubble Bobble Symphony*, to 32bit home platforms.

In development at Eastpoint Software, the game offers four variably powered dinosaurs for selection and over 100 levels with ten boss characters.

Unlike the original game, however, *Symphony* allows you to choose your own path through the game by entering gates which appear at the end of certain screens.

The early PlayStation version **Edge** has seen looks promising, and if Eastpoint can emulate the coin-op's gameplay, it could prove to be an equally essential purchase.



I am writing to express my gratitude to **Charles Cecil**. In his recent interview with **Edge** (issue 34) he referred to an interview that was published in Generation 4 three years ago. In this interview he revealed that he was working on a game about the Knights Templar and the holy grail. The world owes him an eternal debt of gratitude for revealing the existence of this hidden sect. Their secrets lay hidden for hundreds of years until his brilliant scholarship revealed them to us all.

So, like us, you might be forgiven for thinking 'no wonder Intelligent Games produced their brilliant game *Azrael's Tear*' after reading his version of events. You might ignore the fact that the game's designer – **Ken Haywood** – produced his first design six months before the interview was published. You might even think that *Azrael's Tear* did not take over 20 person years of the most creative and original development or that it is not a 'yardstick title' (PC Zone), 'an instant classic' (PC Games) or 'sophisticated and elegant' (CD-ROM magazine).

But on the other hand you might think that he was part of the Templar's conspiracy of darkness and mendacity and his claims are just an elaborate double bluff.

Matthew Stibbe,
MD, Intelligent Games



Is Charles Cecil unfairly taking the credit for resurrecting the Knights Templar legend in his game, *Broken Sword* (left)? Matthew Stibbe certainly thinks so

I have been reading **Edge** since issue 2 and have seen the 'future of interactive entertainment' change very rapidly.

We've now entered the 64bit age, with Nintendo's all-singing, all-dancing N64 being released to the drool-dripping Japanese. M2 is in development. Sony has the Playstation 2 up its sleeves, so where next?

There has got to be a point where the standard of audio and visual performance is more than adequate. I think we're nearing that point. The next step for designers is to stop racing ahead with a 128bit platform (or whatever), take a breather, some nice warm milk and, if they've been good little boys, a choccy biccy. Once they've had their afternoon nap they should consider concentrating on storage media and gameplay.

DVD goes some way towards easing that storage-space burden, but you can guarantee software houses will fill it with hours of FMV. At least Nintendo's decision to go with carts means that programmers will think twice before filling empty spaces with things you will only want to see a couple of times.

Gameplay is essential. What we need to see is multiplayer gaming (across serial link, telephone, or whatever). Graphics count initially, but once you've played a game five or six times you realise they aren't everything. If today's games are so brilliant, why do desktop computer users relish playing Spectrum and C64 games? Answer: gameplay.

Paul Morgan,
mission@enterprise.net



Paul Morgan argues that faster, newer technology rarely facilitates design innovation. *LBA2*'s semi-realtime worlds are an exception

Videogames strive on new technology – if they didn't there would never have been a switch to 16bit, then 32bit and now 64bit. By simply comparing the graphics in *Mario 64* to those achievable on the PlayStation, for example, it's clear that the more advanced technology does enable better games. Try imagining *Mario 64*'s complicated levels with distance fogging to maintain its frame rate – it would lose a great deal in both gameplay and atmosphere.

The arguments for and against FMV will rage on forever. On the one hand you have development directors with thousands of pounds' worth of in-house film studio facilities and the wont to justify their existence;

on the other you have the average gamer who sees FMV in games as irrelevant imagery, preferring instead to see storage space used for extra levels and characters, and hidden worlds, etc.

There seems to be a small contingent of die-hard supporters of minority computing standards, such as the Archimedes, that read your magazine – 'Angel' being possibly the most famous. They constantly write to you to try to clear up any misconceptions on your part that their beloved machines are now merely relics, and impress us all with the Pentium-slaughtering specifications.

What I say to them is that it doesn't matter. Unless by some divine intervention the PC takes a sales nose-dive, the Archimedes will never become more than a cult computer, no matter how large its performance difference. The PC is a disgustingly slow, horrifically expensive format, but that does not seem to stop games companies making consistently amazing and innovative products for it. How well is the PC suited to running *Quake*? It takes a super high-end ninja PC to get the most out of it, whereas a PlayStation could run the game quite adequately, but will have to wait ages for it.

The PC's popularity is a miracle, brought about by consumers kidding themselves that the extra £1,200 it costs over a Saturn is worth it for a word processor and the option to 'surf the Net'. So, developers are having a field day bringing out products for the highest Pentiums that, if optimised, would run nicely on a P75 or P90. What's worse, Sega and Sony have now jumped on the bandwagon, helping to bring about the demise of their own consoles! I seriously doubt if Nintendo would do the same.

Stephen Virgo,
Shoreham, West Sussex

Frankly, a PlayStation would have a tough time recreating *Quake* to the quality of high-end PCs, and die-hard PC fans will surely take umbrage with your assessment of their kit as merely word-processing, Net-surfing boxes.

Saturn and PlayStation software becoming available on the PC is hardly likely to bring about their demise – the majority of 32bit console owners have graduated from 16bit machines, and would not have considered a £1,200 system a viable option to a £200 one, just because the more expensive machine has conversions of the other's software available on it.

There is about as much chance of Nintendo's 64bit titles appearing on other formats as there is the sky falling in.

Nintendo has done it – it has the world's most powerful games box, and by any objective opinion you care to quote, *Super Mario 64* is the best videogame ever. World domination is assured.

This is the way it should be – Nintendo has always made the best videogames, and we all deserve to share in this. But Nintendo is almost as well known for its restrictive practices as for its games. No thirdparty publisher is going to be able to compete with Nintendo for product and price, and with N64 games being so expensive, competition for N64 owners' money is going to be very intense. Thirdparty publishers won't be able to spread their investment across a number of platforms – Nintendo wants exclusivity – and inventory problems are likely to be a real headache with such highly priced carts. Thirdparty publishers are in for a tough time with the N64.

Then take our American cousins. Die-hard gamers aside, what these loveable heathens really want from a videogame system are sports sims packed with loads of stats. The Genesis outsold the SNES in the USA because sports sims were better on the Genesis: it took years for *Madden* on the SNES to finally overtake the Genesis version, by which time it didn't matter any more. Traditionally, the best sports sims come from third parties and the N64 will find it difficult to compete with the already very good competition.

In Europe and especially the UK, Nintendo has decided it can afford to miss its second Christmas. The SNES never recovered from the head start the Mega Drive had (even with the mighty *SFII* on its side) and I doubt the N64 will either.

Finally, price. No matter how good *Super Mario 64* is, it is not worth £70 to anyone other than a die-hard game fan. Videogames need to be more mainstream, not less. I baulk at paying £40 for a PlayStation game (and I've never had to pay more for any of my PS games, all bought new and as soon as they came out, including *Tekken*). The trouble is, we are going to be asked to pay £60 for a lot of N64 games that come nowhere close to the dizzying heights of *SM64*.

Nintendo is going to sell articulated lorry loads of N64s in Japan; elsewhere I think it will be successful but not dominant.

The real losers are the casual game players who will look at Nintendo's prices and lack of software titles and decide to buy into the competition instead.

Now if I can sell the wife's car and we don't go on holiday this year I should just have enough...

Gary Moran,
gmoran@DIALNET.CO.UK

Very few industry watchers now have confidence in Nintendo making as significant an impression in Europe as it already has in Japan and is poised to in the US, with or without a clutch



Glen O'Connell defends Psygnosis for embracing new PC technology (a 3Dfx-accelerated *Wipeout*, above) while still supporting consoles

Although Nintendo operates under a strict licensing policy, *MK3* will still appear on the N64. But at what cost to gamers, asks Gary Moran

Continued next page

Continued

of first rate sports simulations.

The exclusivity issue is rather a grey area – *Mortal Kombat Trilogy* is just one game set to appear on the N64 as well as 32bit platforms, and it's likely that Nintendo will relax its 'policy' further still once the machine becomes more installed in homes, especially in the light of increasingly fierce competition from Sega and Sony.

The price of N64 software is set to be the machine's biggest stumbling block. Worries that cartridge software cannot deliver the value of that delivered on CD have been comprehensively quashed by *Super Mario 64*, but there's no getting away from the fact that no one will relish parting with £70 for a game.

Nintendo's first wave of consumers in Europe is likely to be made up of gamers romanced by what they've heard of *Super Mario 64*: 'virgin' gamers are indeed likely to opt for the cheaper option available.

Realistically, budding programmers are best advised to gain experience with PCs, if only because the format will still be around when many of today's consoles are pushing up daisies.' Is that what **Edge** calls progress? The PC can never become simple to use because of the way it was designed. Computers will become more and more unwieldy to use. If a new format of computer is released it will have to run *Windows*, etc. because of its undeserved popularity, through unefficient emulation. Whoever had the dream of an Intel powered PC being in every home saw you lot coming.

Simon Wyndham, Malvern, Worcestershire

Edge is only too aware of the difficulties involved in both PC development and its use as a home videogames platform.

Edge doesn't call it progress, merely realism.

I would like to take this opportunity to respond and hopefully correct the misinterpretation raised by **Scott Colebourne**'s letter (E35) regarding Psygnosis' commitment to both consoles and CD-ROM. In no way is Psygnosis looking to move away from formats such as the PlayStation in the near future. On the contrary, this year alone we are developing and will be publishing some of the most technically advanced and playable games ever seen on the format. In addition to this we'll also be looking to strengthen our commitment to the Sony format throughout 1997 with titles such as *Monster Trucks*, *Tenka* and *The City of Lost Children* coming in the first quarter of the year.

Obviously we're also looking at the continued growth of the PC CD-ROM format with great interest, particularly the forthcoming range of 3D accelerator video cards, *Direct3D*, MMX technology and so on. Psygnosis' commitment to new technology is at the heart of the company and has helped us become the biggest developer in Europe. It is naive for anybody to suggest Psygnosis should not take the opportunity to experiment and develop software for formats which will expand its horizons. There is obviously a broader issue than this, though. We seriously believe that by working on different formats the quality of overall software will improve across all formats. Take the *Microcosm*-to-*Wipeout* route as an example: without learning from mistakes made in the former we may have never arrived so successfully at the latter.

As far as rival formats go, there are many things which the forthcoming 3D-accelerated PCs will be able to do that Sony's PlayStation couldn't. Don't forget, though, we're comparing a sub-£200 games console against a £2,000-plus PC. And, as a company committed to producing quality software on all commercially viable platforms, it is impossible to suggest that Psygnosis should solely look at the PlayStation as the only format for games. I agree that for, say, the first 12 to 18 months the new 3D cards and technology for the PC may not achieve mass market, but that doesn't mean we should ignore these for this sole reason.

I could go on for ages trying to explain the pros and cons of every single format. However, at the end of the day people should be confident that Psygnosis will continue to look at producing quality software for whichever format(s) it perceives will justify the time and effort put in on a development level and try to continually push back the technological boundaries.

Glen O'Connell, PR Manager, Psygnosis



Are videogames companies running out of ideas and just rehashing the same old stuff? Dale Price thinks so (*Soviet Strike*, above)

I found your N64 coverage to be extremely interesting, and the screenshots, I'm sure, cannot do justice to the apparently breathtaking *Super Mario 64*. However, I feel I have a valid concern. While aesthetically pleasing, none of the current flow of games seem to push back the boundaries of gameplay. Most games seem to be simply rehashes of old classics such as *Street Fighter II*, *Virtua Fighter*, *Mario*, *Ultima* and *Desert Strike*. Even the mighty Sega cannot seem to muster up new ideas, and so fob off people with constant sequels.

Another concern I have is that developers are abandoning the systems that made them what they are and signing up for the 32bit machines. This may seem like good business sense, but millions of 8bit and 16bit machines are being left unsupported, much to the dismay of their owners. So, as they leave these systems it must be quite sickening to find that for all their efforts, *Yoshi's Island* on the SNES has remained the top game of 1996 since January on Teletext's Digitiser. Game designers of the early eighties could fit more gameplay into 48K than most can now fit onto 600Mb of CD space. I currently own a Jaguar, and my next system will be a PC. Why? Because I can get all the Spectrum and C64 emulators and games I want, then.

Dale Price, Heybridge, Essex

To fit a game into 48K was an often tricky task, resulting in many simple-but-fun games. Today, however, with the amount of RAM available to designers and programmers, the temptation is to create intricate models and AI for game baddies to possess. This is, however, not necessarily a good thing. For example, with the exception of the boss characters, the baddies in *Mario 64* are rather dumb, following fairly simple routines to chase Mario or patrol certain areas. It's this simplicity that adds to the game's appeal – if the baddies were able to calculate your every move and make a pre-emptive strike, the skill of the player would be lost. On the other hand, however, a game as complex as *Civ 2* would obviously not be possible in 48K.

As for games being rehashed, it's true to say that orginality is a rare commodity in modern

videogaming, but if the public keeps buying it (as sales figures for *MK3* will testify), developers would be fools not to produce the same old stuff. After all, their purpose is to create money, not to follow some higher gaming conscience.

Ten out of ten for *Mario64*... so it's the perfect game then? I remember quotes like 'six out of ten is still an above-average game'. I just don't see that any game can be perfect, or be *so* good that it warrants a perfect score. Did you really think about the grade or are you just trying to recreate the hype that accompanied the Playstation and Saturn? Ask yourselves these questions when justifying this perfect mark: will everybody love this game? Will you be playing this game forever? Is the difficulty curve so perfectly set so that even the worst gamesplayer will develop with the game and complete it? Is it worth the money? (**Edge** may get all games for free but some of us can't afford to). Will it, at the very least, live up to everyone's expectations and in most cases surpass them? Will no other game ever better it? Will you stop all other games in the genre due to its perfect nature? Will you stop playing all other games just because they are not *Mario 64*?

In giving a game a perfect mark you forgo any excuse that 'this is just our opinion' as to deserve this grade the game must be liked by all. Now, I've seen *Mario* running and yes it does look nice but... my jaw didn't hit the floor. To be honest I've always found *Mario* games too repetitive - will this be any better?

In a year or so, who knows. I may write back and say what a life-changing event *Mario 64* was... but I do doubt it. The perfect game does not exist! Stop thinking '**Edge** knows all' and start giving us the grown-up attitude that **Edge** started with.

Sam Maxwell,
irvine@enterprise.net

Edge thought long and hard about giving *Super Mario 64* a rating of ten out of ten, and it comes as little surprise to discover it has not found favour with certain readers.

No one is suggesting that the game is perfect (or, indeed, that there is such a thing as a perfect game), but **Edge**'s review format works on a sliding scale of one to ten, and what's the point of having a ten rating if it's never used? Reviews are a subjective thing by their very nature, but **Edge** firmly believes that in its three-year existence it has never seen a game of *SM64*'s quality, and was happy to wheel out the honour with no fears of incrimination.



No game is perfect, says Sam Maxwell, so why did Edge give *SM64* ten out of ten? Simply because it is the best game Edge has ever judged

Q and A

Rely on Edge to cut through the technobabble. Write to Q&A, Edge, 30 Monmouth Street, Bath, BA1 2BW

Q 1 Will a Japanese N64 work in colour at full speed using a full screen on my television? I have a fairly new (about a year old) Sanyo 21" Nicam TV. I know it can accept an S-Video or RGB signal via its Scart socket, and I was also told it can't decode an NTSC signal but it can accept a modified NTSC 4.43 signal such as one from a VCR.
2 What type of NTSC signal does the N64 output?
3 Does RGB mode slow the picture down to 50Hz or does it remain at 60Hz even though my TV is PAL?
4 When I used an RF cable the picture was black and white - why?
5 Also, I have a composite Scart lead (the one all UK SNES machines come bundled with) and was wondering whether I would get a full-screen colour picture using it with the N64 or will it just be in black and white or will it just not work at all?
6 What are the disadvantages of getting an NTSC-to-PAL converter box over getting an RGB conversion job done?
7 You said that manufacturers would soon be making RGB Scart leads for the N64. Does this mean a full-screen, full-speed colour picture? If so, how much do you think a lead would cost and where could you get one from?
8 Can you use American cartridges on a Japanese N64?



Adili,
sgt001@ph.ac.uk

A 1 & 2 NTSC consoles from the US and Japan output an NTSC 3.58 signal which means that this will not be decoded by your TV set. The only way that you would be able to get it working is by getting your console modified and then plugging in a standard RGB Scart lead designed for the SFC/SNES.
3 NTSC machines will only operate at 60Hz, no matter what signal type you're using.
4 Because it's displaying a 60Hz picture with NTSC colour, your TV cannot decode this.
5 It would appear as a full-screen black and white picture, or possibly a squashed, full-speed picture depending on your TV (some TVs will do this to the picture on some AV channels.
6 Poor colour - the conversion process usually means that colours get distorted or washed out. An RGB picture will be visibly superior.
7 It appears that the NTSC Nintendo 64 is not wired up to RGB and needs to be modified to get an RGB signal out of it. Only then can a standard SFC/SNES RGB Scart lead be used.
8 Nintendo of America maintains that its machine will not be compatible with Japanese cartridges. However, until the US model is released it's still a matter of conjecture.

Q 1 Do you know if Namco has any plans for a conversion of *Rave Racer* on the PlayStation?
2 When is *Soul Edge* coming out on the PS in Japan?

Jim Culver,
Jim_Culver@ibm.uk.com

A 1 No, it's not planned for conversion, although a new version of *Ridge Racer* is pencilled in for release next year.
2 September seems likely for a Japanese *Soul Edge* release. Incidentally, the conversion will include the additions that made it into the *Version II* coin-op (see pic left).

Q 1 When will Namco be revealing its System 23 technology talked about in **Edge**? What technology is this based around and will it be more powerful than Sega's Model 3?
2 How does M2 feature in Konami's arcade plans? Is it likely that this technology will be more powerful than M2/System 23?

Jamie Thorp,
Sale, Cheshire

A 1 It's expected that Namco will unveil System 23 at the JAMMA show in mid September. It's based upon VideoLogic's PowerVR technology and *Tekken 3* will be the game to showcase the hardware. Just how many PowerVR chips will be running in parallel isn't known, but the system's ease of expansion is a feature than could allow the placement of multiple chips in parallel to deliver in excess of 2,000,000 polygons per second.
2 Konami is known to be working with Matsushita on arcade hardware based around the M2 technology, but there is no information on its power.

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ADRENALIN RUSH ™

Next issue, **Edge** analyses the most active element in the nuGame culture mix – the integration of professional music into interactive entertainment. From the pioneering work by Psygnosis to endow its *Wipeout* brand with underground club kudos, to the use of contemporary classical composers such as Michael Nyman for the soundtracks to games like *EO*, it's an area commanding enormous attention.

Plus, **Edge** heads several hundred miles north to Dundee for a long-awaited exposé of DMA Design – the team responsible for the legendary *Lemmings*. **Edge** delivers the lowdown on the company's new wave of interactive entertainment including *Grand Theft Auto*, *Body Harvest* and previously unseen projects.

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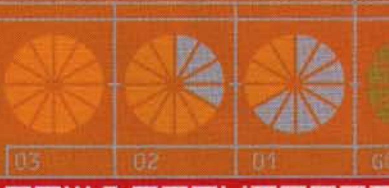
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